Missouri EPIDEMIOLOGIST

Volume 20, Number 3 *May-June 1998*

Tuberculosis Annual Report for 1997

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The number of reported tuberculosis cases nationwide continued to decrease in 1997. According to the Centers for Disease Control and Prevention (CDC) 19,855 cases of tuberculosis were reported in 1997, representing a 7.0 percent decrease from the 21,337 cases reported in 1996. This is the first time since national tuberculosis reporting was initiated in 1953 that the United States has had less than 20,000 cases reported during a one-year period. The case rate decreased from 8.0 per 100,000 in 1996 to 7.4 in 1997. This represents the fifth consecutive year that tuberculosis cases have decreased nationally.

The number of reported tuberculosis cases in Missouri increased by 10.7 percent, from 224 cases in 1996 to 248 cases in 1997. The case rate increased from 4.2 to 4.7 per 100,000 population. See Figure 1 for trends.

For the second consecutive year, the major metropolitan areas accounted for 63 percent of reported cases. Rural areas accounted for 37 percent of the cases. Two of the four major metropolitan areas experienced significant increases in the number of reported cases. St. Louis City increased from 44 to 60 cases (36.4%), and St. Louis County increased from 32 to 47 cases (46.9%). In Kansas City, the number of cases decreased from 48 to 39 cases (-18.8%). In Springfield-Greene County, the number of cases decreased from 17 to 10 cases (-41.2%). The case rates for these areas in 1997 were 17.1 per 100,000 for St. Louis City, 4.7 for St. Louis County, 8.8 for Kansas City, and 4.5 for Springfield-Greene County. See Figure 2 on the next page.

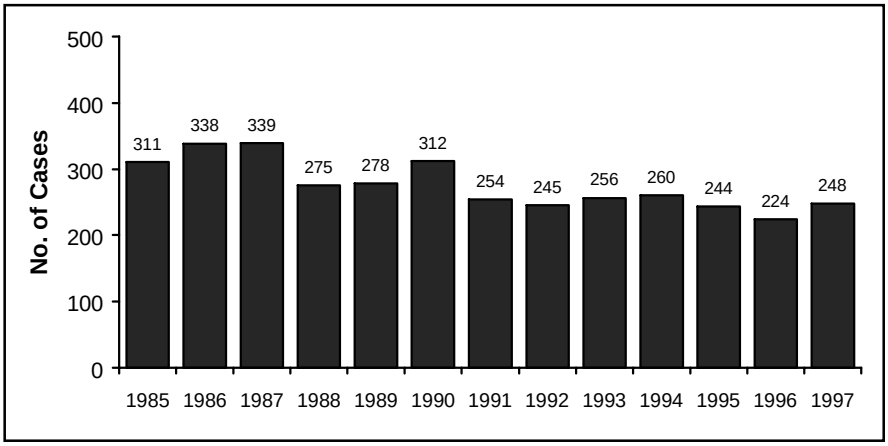

Figure 1. Reported tuberculosis cases by year, Missouri, 1985–97.

The number of reported cases in the rural areas showed an increase of 10.8 percent, from 83 cases in 1996 to 92 cases in 1997. Increases were noted in four of the six health districts. The Northwestern District increased from 12 to 18 cases (50.0%); the Southwestern District increased from 11 to 15 cases (36.4%); the Southeastern District increased from 27 to 30 cases (11.1%); and the Central District increased from 17 to 18 cases (5.9%). The Northeastern and Eastern Districts experienced decreases in the number of reported cases. The Northeastern District decreased from 4 cases to 1 case (-75.0%) and the Eastern District decreased from 11 to 10 cases (-9.1%). A decrease from one case to no cases was observed in the state and federal correctional institutions. See Figure 2 on the next page.

Reported cases of tuberculosis among males continued to outnumber those in females. In 1997, 61.3 percent (152) of the cases were male and 38.7 percent

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(96) were female. In 1996, 64.7 percent (145) of the cases were male and 35.3 percent (79) were female.

In 1997, individuals with active tuberculosis disease ranged in age from 1 to 93. Increases in reported cases were observed in all but the 25–44 age group. As in prior years, the largest number of cases occurred in persons 65 and over. See Figure 3.

Tuberculosis case rates vary significantly among racial and ethnic groups. From 1996 to 1997, case rates per 100,000 population increased among whites (from 2.5 to 2.6); blacks (from 12.0 to 16.8); and Hispanics (from 9.5 to 23.1). However, case rates among Asians decreased from 62.1 to 50.7. While this decrease is welcome, the case rate among Asians is still noticeably high. See Figure 4.

The largest proportion of active disease cases, 81.0% (201 cases) were pulmonary compared to 19.0% (47 cases) which were extrapulmonary. There were 17 cases with dual-disease sites. The sites of extrapulmonary disease were lymphatic (18), pleural (11), bone (7), meningeal (3), miliary (2), genitourinary (2), peritoneal (1) and other (3). See Figure 5.

Tuberculosis infection means that the person has been exposed to the bacteria that cause tuberculosis. They are not sick because the bacteria are inactive. They cannot spread the bacteria to others. A person with tuberculosis infection usually has a positive skin test, a normal chest x-ray and does not feel sick.

Tuberculosis disease means that the person is sick from bacteria that are actively reproducing in their body. Persons with pulmonary tuberculosis usually have a positive skin test, an abnormal chest x-ray and one or more of the symptoms of tuberculosis such as persistent cough, chest pain, feeling weak, weight loss, fever and/or night sweats. These people are often capable of giving the infection to others.

In 1997, drug susceptibility studies were performed on 204 (82.3%) of the 248 tuberculosis cases reported. Five (2.5%) of these 204 cases were found to have multiple-drug resistant organisms. In addition, the isoniazid resistance rate remained high at seven percent. When the isoniazid rate exceeds four percent, initial use of four tuberculosis drugs is recommended for all active disease patients and suspects.

A comparison of the tuberculosis case register and the HIV/AIDS case register is done on a quarterly basis to discover cases with both conditions. This matching process is presently done manually, but computerized matching of databases is anticipated in the fall of 1998 after the Missouri Department of Health has implemented its integrated data network (MOHSAIC). For the period of January through June 1997, the manual-matching process discovered four cases of tuberculosis/AIDS, 31 cases of mycobacteria other than tuberculosis (MOTT)/AIDS and one report of tuberculosis infection/AIDS. Of the four cases of tuberculosis/AIDS, one was reported from St. Louis City, two from St. Louis County and one from Kansas City. These four cases were between the ages of 25 to 44 and all were male.

In 1997, no active tuberculosis disease cases were reported in the state correctional system as compared to one case in 1996 and three in 1995. During 1997, a total of 41,582 inmates were skin tested. Of those, 655 (1.6%) were identified as new positives and 3,981 (9.6%) had a history of previously positive skin tests. In 1997, a total of 9,198 state correctional system employees were tested. Of those tested, 106 (1.2%) were identified as new positives and 842 (9.2%) had a history of previously positive skin tests.

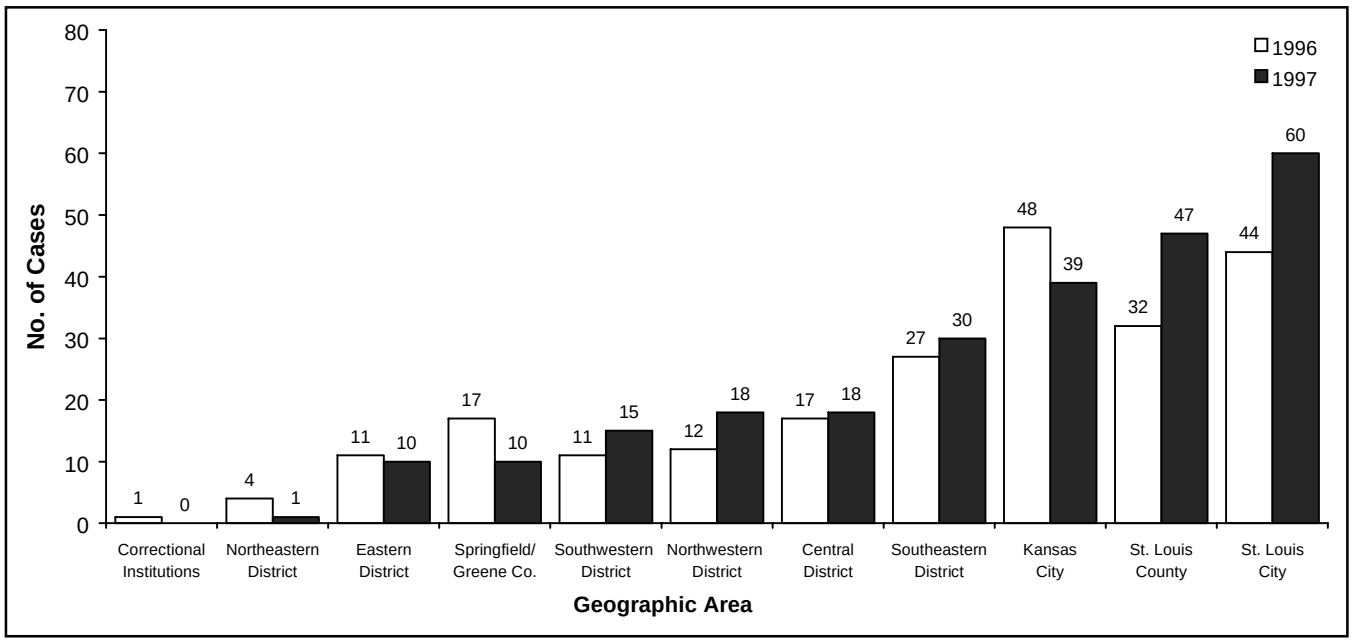

Figure 2. Reported tuberculosis cases by geographic area, Missouri, 1996 and 1997.

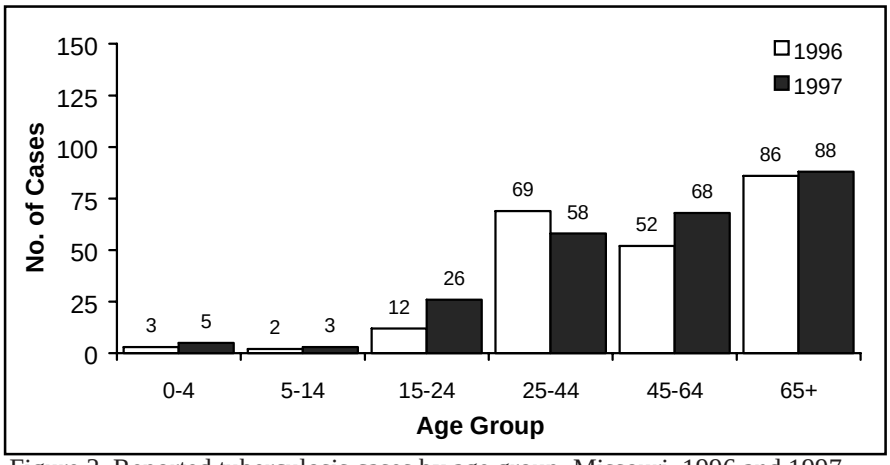

Figure 3. Reported tuberculosis cases by age group, Missouri, 1996 and 1997.

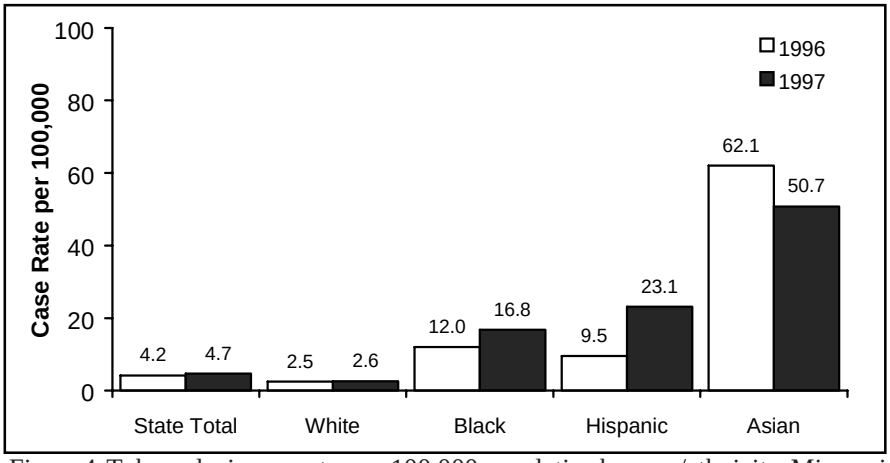

Figure 4. Tuberculosis case rates per 100,000 population by race /ethnicity, Missouri, 1996 and 1997.

The number of tuberculosis cases reported in nursing homes is of concern to the Bureau of Tuberculosis Control. These facilities accounted for 12 (4.8%) of the reported cases in 1997. The bureau continues to address this issue by working closely with nursing home associations, residential care associations and the Division of Aging to provide facilities with the recommendations for tuberculin skin testing and follow-up of residents and employees.

The number of tuberculosis cases occurring among foreign-born persons increased from 40 (18 percent of reported cases) in 1996 to 52 (21 percent of reported cases) in 1997. Case rates among Asians, who are mostly foreign-borne, are disproportionately higher than for other racial and ethnic groups.

The initial use of four tuberculosis medications is another priority for the bureau in order to lower the drug resistance rate. All active disease patients, and all suspects, should be started on four medications from the beginning of treatment until drug susceptibility is determined. Those medications include isoniazid, rifampin, pyrazinamide and ethambutol or streptomycin. In 1995, only 50.6 percent

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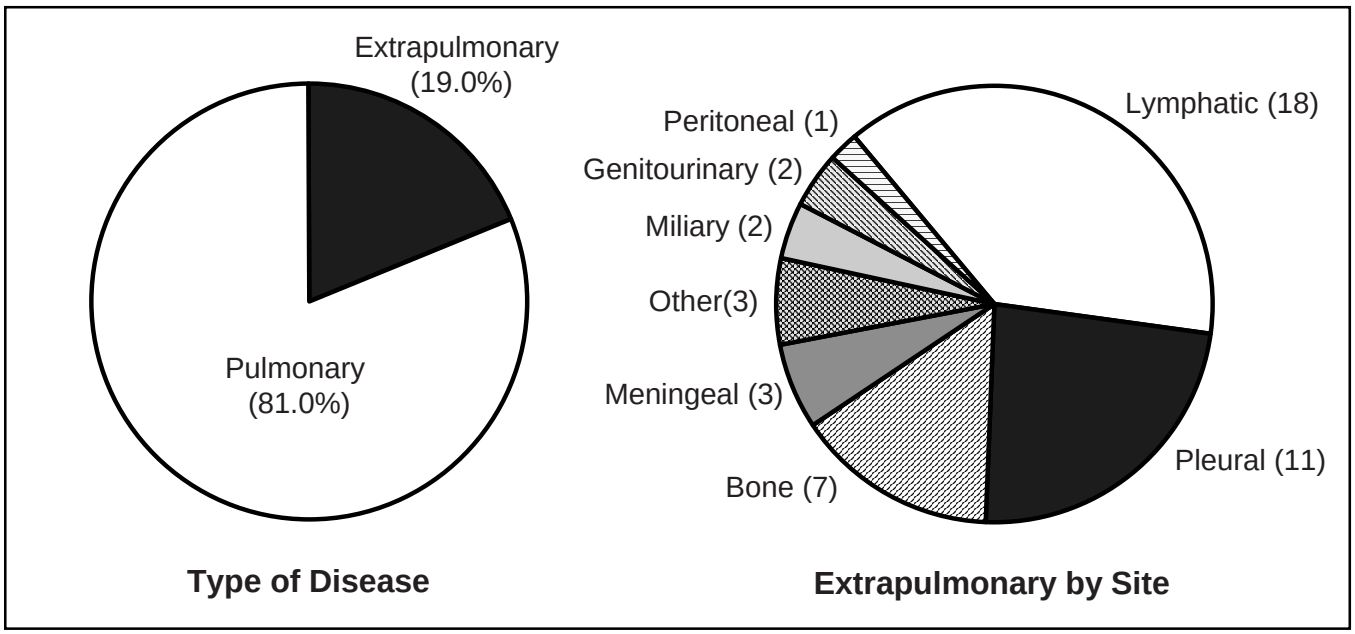

Figure 5. Reported tuberculosis cases by type of disease and site, Missouri, 1997.

1997 Outbreaks of Communicable Disease*

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While the principles of outbreak investigation remain constant, each infectious disease outbreak or cluster differs, making it necessary to approach the investigation with creativity and innovation. Unraveling the source of an outbreak requires collaborative interaction between personnel in various roles and work settings. Depending upon the complexity of an outbreak, interaction may involve federal, state, local and facility-based personnel. These persons function as a team and each plays an integral part in resolving an outbreak or cluster. The Bureau of Communicable Disease Control is grateful for the assistance of persons in every part of the state who contribute time, intense effort and expertise helping to protect Missouri citizens from infectious diseases.

In 1997, 31 communicable disease outbreaks were reported in Missouri involving 928 people. This is a decrease of 22.5 percent from the 40 outbreaks reported in 1996. These outbreaks involved many different modes of transmission and widely varying etiologic agents in a variety of settings. The modes of transmission were as follows: 19 were suspected person-to-person transmission involving 655 people, ten were foodborne and impacted 254 people, one was waterborne involving eight people swimming at a beach, and one was airborne involving 11 people exposed to vaporizers in a group home.

Schools (elementary, secondary and one college) were the most common settings for outbreaks in 1997, accounting for ten (32.2 %) of the 31 reported outbreaks.

Table 1. Communicable disease outbreaks by cause, setting and number of cases, Missouri, 1997.

Disease/ Mode of Transmission	No. of Outbreaks	Setting	No. of Cases
Acute Gastrointestinal Illness of Unknown Etiology/			
Foodborne	6	FG, 3R, 2S	105
Person-to-Person	5	CC, R, 3S	147
Waterborne	1	H	8
Total	**12**		**260**
Hand, Foot and Mouth Disease/ Person-to-Person	2	2CC	13
Influenza-Like Illness/ Person-to-Person	2	I, W	32
Salmonellosis/Foodborne	2	C, R	121
Shigellosis/Person-to-Person	2	C, CC	20
Acute Respiratory Illness from Multiple Bacteria/Waterborne	1	GH	11
Campylobacter/Person-to-Person	1	GH	28
Chickenpox/Person-to-Person	1	CC	5
Clostridium perfringens/Foodborne	1	FG	21
Fifth Disease/Person-to-Person	1	S	5
Hepatitis A/Person-to-Person	1	S	7
Influenza A (culture confirmed) Person-to-Person	1	S	350
Pediculosis/Person-to-Person	1	S	15
Ringworm, Scalp/Person-to-Person	1	S	15
Rotavirus/Person-to-Person	1	CC	18
Staphylococcus aureus/ Foodborne	1	R	7
TOTAL	**31**		**928**

Key:
C =Community-Wide
CC =Child Care
FG =Family Gathering
GH =Group Home
H =Hotel
I =Prison or Other Correctional Facility
R=Restaurant
S =School
W=Workplace

Child care facilities and restaurants were second with six (19.4%) outbreaks each. Two (6.4%) outbreaks occurred in each of the following settings: community-wide (no association with any specific activity), private homes and group homes. Single (3.2%) outbreaks occurred in a hotel, a state government office and a private business office. The largest single event was an outbreak of culture-confirmed influenza A in a college affecting 350 students. Out-

*Does not include outbreaks related to sexually transmitted diseases, tuberculosis, vaccine-preventable diseases and zoonotic diseases. These disease outbreaks are covered in other articles contained in this issue.

breaks are shown in Table 1 categorized by cause, setting and number of cases.

In the past, only culture-confirmed cases were accepted as influenza; all others were considered to be influenza-like. As of January 1998, positive results from direct enzyme immunoassay (EIA) "rapid" tests are accepted as diagnostic of influenza. This change must be considered in future analysis of influenza and influenza-like disease incidence data. An advantage of this method of testing is the half-hour response time, which makes it very useful for physicians and laboratories. However, the kit tests only for influenza type A and does not allow for subtyping. If other types are suspected or if subtyping is desired, please contact the State Public Health Laboratory for assistance at (573) 751-3334.

The largest category of outbreaks reported during 1997 was acute gastrointestinal illness (AGI) of unknown etiology (12 outbreaks affecting 260 people). Foodborne transmission was the most common mode, being implicated in six of these outbreaks. Five AGI outbreaks were the result of person-to-person transmission. One incident involved individuals who had been swimming in a lake with a high coliform count. AGI outbreaks occurred in the following settings: five schools, four restaurants, one child care facility, one recreational facility and one private home.

Hand, foot and mouth disease (enteroviral vesicular stomatitis with exanthem) was the culprit in two outbreaks that affected 13 people. The outbreaks occurred in child care settings and were the result of person-to-person transmission.

Influenza-like illness was diagnosed in two outbreaks encompassing 32 people. One outbreak affected employees of a state government office while the other occurred at a private business office. The mode of transmission was person-to-person.

Table 2. Nosocomial disease outbreaks by cause and number of cases, Missouri, 1997.

Disease/ Mode of Transmission	No. of Outbreaks	No. of Cases
Scabies/Person-to-Person	14	323
Acute Gastrointestinal Illness of Unknown Etiology/ Person-to-Person	6	186
Chickenpox/		
Airborne	2	9
Person-to-Person	1	3
Total	**3**	**12**
Pediculosis/Person-to-Person	3	41
Acute Respiratory Illness of Gram-Negative Rods/Person-to-Person	1	27
Influenza/Person-to-Person	1	75
Respiratory Syncytial Virus/ Person-to-Person	1	5
Methicillin-Resistant *Staphylococcus aureus*/ Person-to-Person	1	3
Phthirus Pubis/ Person-to-Person (possible fomite)	1	4
Fungal Rash/Person-to-Person	1	6
Legionellosis/Airborne	1	4
TOTAL	**33**	**686**

Salmonella sp. were incriminated in two outbreaks. Both outbreaks resulted from foodborne transmission of rare serotypes and affected a total of 121 people in Missouri. An outbreak caused by *S. agona* involved 105 people who had eaten in the same restaurant over a period of time. The second outbreak affected 16 people in Missouri plus a total of 93 people in Kansas, Oklahoma and Minnesota. This outbreak was caused by growing alfalfa sprouts from seeds contaminated with *S. infantis* and *S. anatum* with subsequent distribution of the sprouts to grocery stores, restaurants, and wholesalers.

Shigellosis was diagnosed in two outbreaks affecting a total of 20 people. One outbreak occurred in a child care facility and was the result of person-to-person transmission. The other outbreak was community-wide and assumed to be caused by person-to-person transmission since foodborne and waterborne transmission were ruled out.

The year also saw 11 people in a group home who suffered acute respiratory illness caused by gram-negative rods associated with water in vaporizers and 28 cases of campylobacter infection resulting from person-to-person transmission in a group home. Other outbreaks in a school setting included five cases of Fifth disease (erythema infectiosum) spread person-to-person in a classroom, seven students with suspected person-to-person transmission

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Tick-Borne Disease Summary - 1997

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Rocky Mountain Spotted Fever

Illness

Rocky Mountain Spotted Fever (RMSF) is characterized by sudden onset of symptoms including headache, conjunctivitis, peripheral and periorbital edema, chills, fever lasting two to three weeks, myalgia and a characteristic maculopapular rash which usually appears on the second to sixth day.

The rash is the most characteristic and helpful diagnostic sign. It usually appears first on the wrists and ankles and may include the palms and soles, spreading centripetally to the rest of the body. If treatment is delayed, petechiae and purpuric skin lesions are common. Medical professionals are encouraged to investigate the possibility of tick exposure when diagnosing illnesses in patients presenting with these symptoms.

Organism and Transmission

The infectious agent of RMSF is *Rickettsia rickettsii*. Even though dogs, rodents and other small animals may harbor the rickettsiae, the principle vector and reservoir is the tick, *Dermacentor variabilis* (the American dog tick). Wild rodents and lagomorphs are reservoirs for the disease, however, ticks also act as a reservoir through transovarial transmission.

Epidemiology

Ninety percent of the rickettsial diseases that occur annually in the United States are RMSF. During the 1980s, approximately 50 deaths per year were attributed to RMSF. An endemic focus for RMSF exists in Missouri, Arkansas, Oklahoma and Texas. Twenty-four cases were reported in Missouri in 1997. Figure 1 shows location of cases by county. The highest number of cases, 54, was reported in 1988. Since 1988, the number of cases reported per year has declined, probably due to the normal cycling of disease.

Better diagnostic procedures are allowing for early diagnosis of cases, and antibiotic treatment is very effective. The severity of RMSF cannot be discounted, as five deaths in the past ten years in Missouri have been attributed to RMSF.

Tularemia

Illness

Tularemia is characterized by fever, chills, myalgia and headache. Onset is frequently abrupt and conforms to a specific syndrome. The most common syndrome, ulceroglandular, is characterized by 1) painful maculopapular lesion at the portal of entry with subsequent ulceration and slow healing; and 2) painful, acutely inflamed lymph nodes that may drain spontaneously. The other common syndromes are: **glandular**—no skin or mucous membrane involvement, **oropharyngeal**—severe exudative pharyngitis, **oculoglandular—**severe conjunctivitis and preauricular lymph node involvement, **typhoidal**—high fever, hepatomegaly and splenomegaly and **pneumonic**.

Organism and Transmission

Tularemia, also called rabbit fever and deerfly fever, is a disease of man and animals caused by the bacteria *Francisella tularensis*, a small gram-negative coccobacillus. The bacteria is transmitted from wild and domestic mammals by blood-sucking arthropods (e.g. tick, deerfly, mosquito). In the United States, rabbits and ticks are major sources of infection. Infected animals and arthropods are infective for prolonged periods: frozen, killed rabbits can remain infective for more

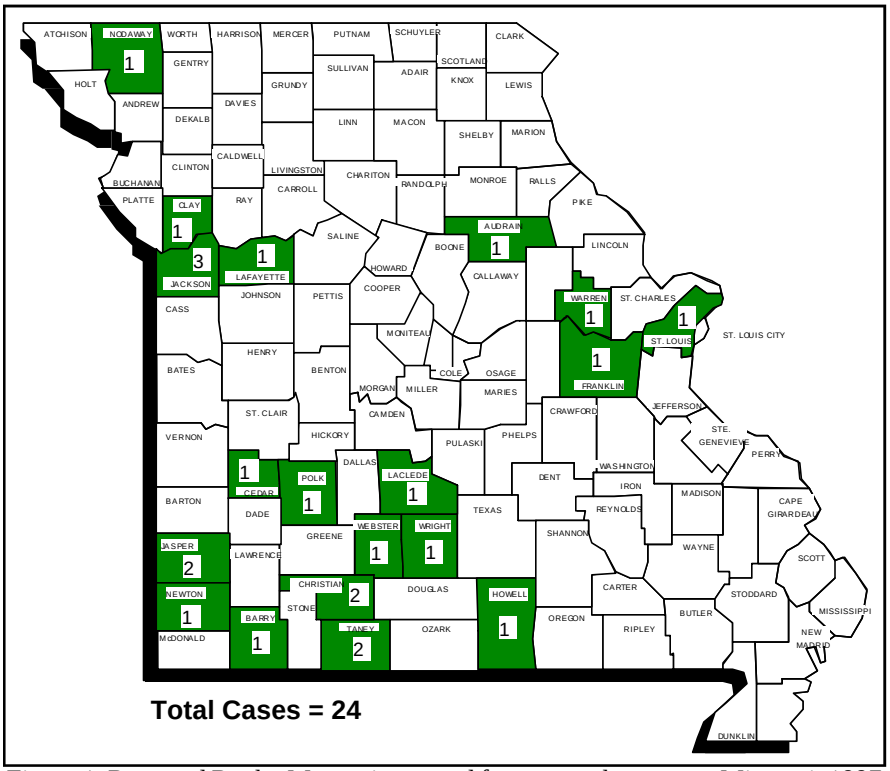

Figure 1. Reported Rocky Mountain spotted fever cases by county, Missouri, 1997.

than three years. Persons at highest risk are those with occupational or recreational exposure to infected animals and their habitat, and laboratory technicians working with *F. tularensis*.

Epidemiology

Tularemia is enzootic in animals throughout the continental United States and in most areas of the world between 30 to 71 degrees north latitude. Based on biogeographic epidemiology, Missouri lies in one of the two recognized tularemia regions in the North American continent. This region, called the Ozark Plateau, encompasses portions of Missouri, Arkansas, Oklahoma and Kansas. This oldest tick-borne disease in Missouri has declined from an average of 35 cases per year over the past 15 years to a record low of only nine cases reported in 1996. In 1997, 18 cases were reported in Missouri. Figure 2 shows location of cases by county. Many factors affect the organism, the vector and the host. Variation in any of these factors produce cycles in disease incidence. At the present time, tularemia is at a low ebb. Most tularemia cases in Missouri occur south of the Missouri River.

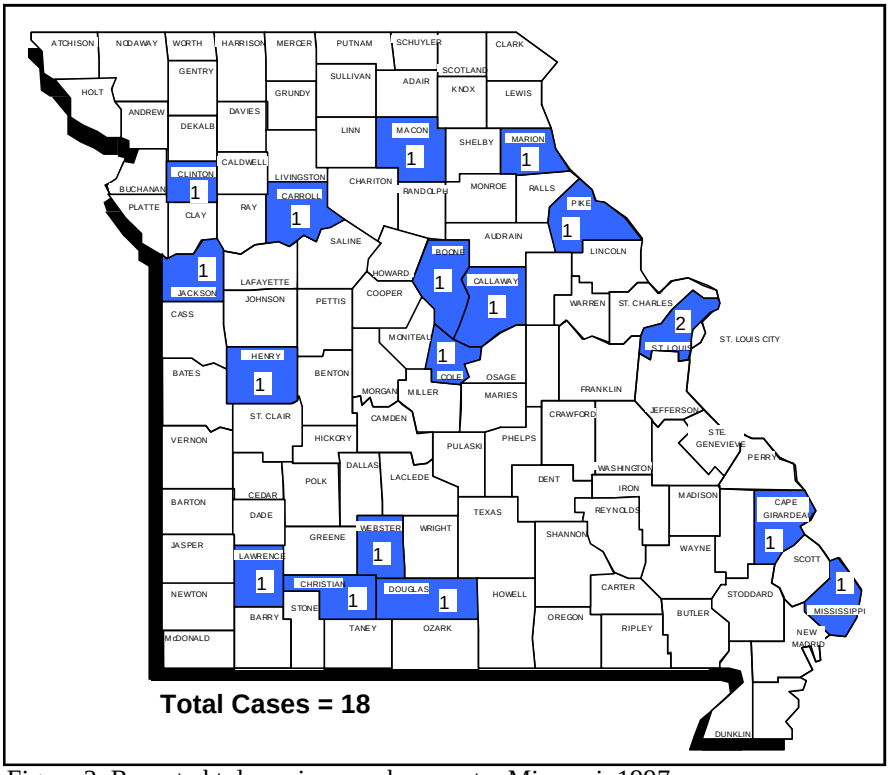

Figure 2. Reported tularemia cases by county, Missouri, 1997.

Ehrlichiosis

Illness

Ehrlichiosis is an acute febrile illness. As with other tick-borne diseases, it has an acute onset with flu-like symptoms including headache, myalgia, anorexia, nausea and, in some instances, a rash. Clinical laboratory abnormalities include leukopenia, thrombocytopenia and elevated levels of hepatic amino-transferase.

Organism and Transmission

Ehrlichiosis is caused by the organism *Ehrlichia chaffeensis*, a rickettsial species. The organism is commonly transmitted by *Amblyomma americanum* (the Lone Star tick), though *Dermacenter variabilis* can also be a vector.

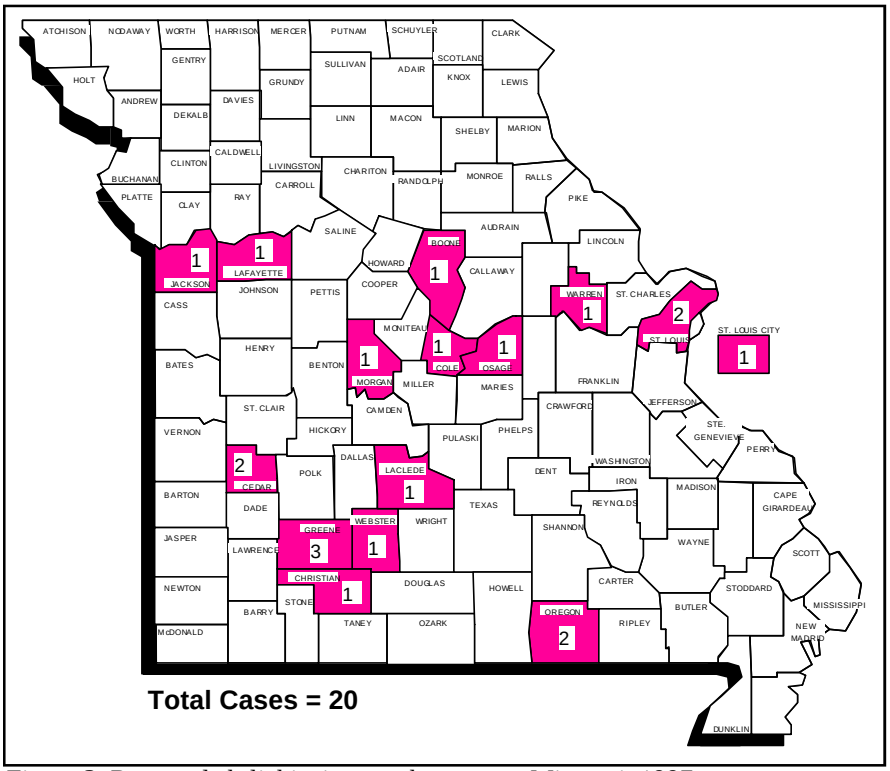

Figure 3. Reported ehrlichiosis cases by county, Missouri, 1997.

Epidemiology

A total of 142 human ehrlichiosis infections were reported in Missouri since 1988, or an average of 15 cases per year. Missouri continues to account for the majority of the ehrlichiosis cases reported nationally, with central

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Missouri being the epicenter of the state. In 1997, 20 cases of ehrlichiosis were reported. Figure 3 shows location of cases by county.

Borreliosis

Illness

Clinical manifestations of borreliosis are divided into three stages: early localized, early disseminated and late disease. Early localized disease is manifested by a distinctive rash at the site of a recent tick bite. The rash begins as a red macule or papule and usually expands during days to weeks to form a large annular lesion that is 5 cm or more in diameter. This characteristic rash, erythema migrans, can vary in size and shape and is often accompanied by fever, malaise, headache, mild neck stiffness and arthralgia.

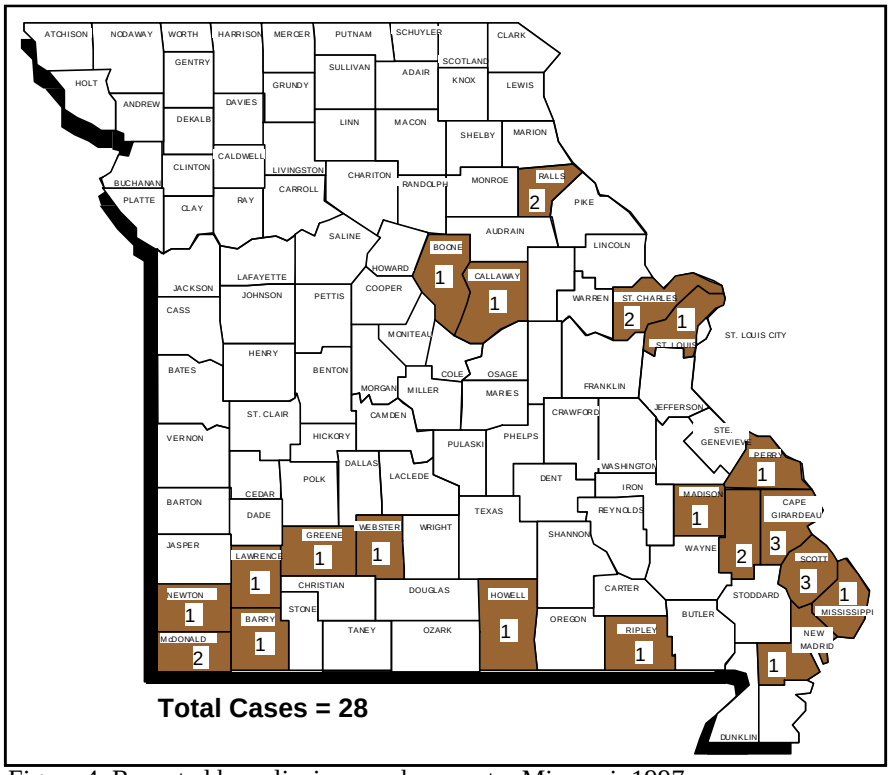

Figure 4. Reported borreliosis cases by county, Missouri, 1997.

The most common manifestation of early disseminated disease is multiple erythema migrans. This rash usually occurs three to five weeks after the tick bite and consists of secondary annular erythematous lesions, similar to, but smaller than the primary lesion. Other common manifestations of this stage are palsies of the cranial nerves, meningitis and conjunctivitis, arthralgia, myalgia, headache and fatigue. Carditis, which usually is manifested by various degrees of heart block, rarely occurs.

Late disease most commonly is characterized by recurrent arthritis. Chronic arthritis is uncommon in children who have been treated with antibiotics in the early stages. Arthritis may occur without the early disease manifestations. Central nervous system manifestations also occur late in the disease, and include encephalopathy and neuropathy, including one or more peripheral nerves.

Organism and Transmission

Borreliosis is caused by *Borrelia spp.*, spirochetes transmitted by ticks to wildlife and man. The tick most commonly reported as the vector for borreliosis is *Ixodes scapularis (*formerly *Ixodes dammini*). *I. scapularis* is not common in Missouri. Other possible vectors in Missouri include *Amblyomma americanum* (the Lone Star tick) and *Dermacentor variabilis* (the American dog tick).

Epidemiology

Borreliosis has become the most commonly reported vector-borne disease in the United States. Ninety percent of all cases are reported from the northeastern United States. There were 28 cases of borreliosis reported in Missouri in 1997 that met the case criteria set by the Centers for Disease

Personal Protection Against Tick-Borne Diseases

- Avoid known tick-infested areas.
- Apply repellents such as diethyltoluamide (DEET) and dimethylphthalate to clothing and exposed parts of the body. (These repellents are active ingredients in many popular insect repellents. Read and follow label directions.)
- Wear clothing that interferes with tick attachment (boots, full length and one-piece outer garments).
- Avoid sitting on grass and logs where exposure to ticks increases.
- Every four to six hours, inspect entire body, including scalp, arm pits and groin, to detect and remove attached ticks.

Table 1. Reporting Criteria for Tick-Borne Diseases
(A confirmed case meets both clinical and laboratory criteria.)

	Ehrlichiosis	Tularemia	Rocky Mountain Spotted Fever	Borelliosis*
Clinical	Tick exposure, acute onset, febrile myalgia, headache, rigor, malaise	Several disease forms, ulceroglandular, intestinal, pneumonic	Tick exposure, acute onset, febrile, myalgia, headache, petichial rash	Characteristic erythematous rash >5 cm in diameter **OR** Chronic manifestations
AND				
Laboratory	Four-fold titer rise in IFA for *E. canis* or *E. chaffeensis* **or** PCR **or** *Intracytoplasmic morulae* + IFA >64	Isolate *F. tularensis* **or** four-fold titer rise for *F. tularensis* antigen	Four-fold titer rise in IFA for *Rickettsia rickettsii* **or** PCR **or** isolate	Isolation of *B. burgdorferi* **or** EIA + Blot** **or** IFA + Blot**

*Lab methods are not decisive in Missouri and are not required for confirmation.
**Blot+ is 2/5 IgM and 5/10 IgG bands

Control and Prevention and the Council of State and Territorial Epidemiologists. Figure 4 shows location of cases by county.

Reporting

Disease reporting is a tedious and time-consuming task. However, it is an important component of health care. By analyzing disease occurrence, characteristics of the disease's effect on the population can be better understood. Knowing geographically where specific diseases are occurring and in what populations is important preventive information. This information also alerts physicians and other providers to new or emerging diseases that may be appearing in their patient populations. Tick-borne diseases recognized in a specific location can be controlled to prevent further disease spread. See Table 1 for criteria to be used when reporting tick-borne diseases.

Tick-borne diseases should be reported promptly to your local health department, or to the Bureau of Veterinary Public Health at (573) 751-6136 or (800) 392-0272.

VIDEOCONFERENCES

The Section of Vaccine Preventable and Tuberculosis Disease Elimination will sponsor the following Centers for Disease Control and Prevention (CDC) satellite broadcasts:

Immunization Update 1998
September 10, 1998

This program will provide an update of new vaccines and recommendations as well as changes in the immunization schedule.

Adult Immunization: Strategies That Work
CANCELED
October 8, 1998

Preparing for the Coming Influenza Pandemic
November 20, 1998

This program will identify the main points in the guidelines for influenza pandemic preparedness and discuss a successful local and state preparedness program. In addition, the participants will have the opportunity to form partnerships and to start a plan of action to prepare emergency response plans for handling an influenza pandemic.

Both broadcasts will feature question-and-answer sessions in which participants can address questions to the course instructors on toll-free telephone lines. Continuing education credits will be offered for a variety of professions.

For more information about the course, site locations and broadcast times, please contact the immunization representative located in the district health office or the Section of Vaccine Preventable and Tuberculosis Disease Elimination at (800) 699-2313.

Communicable Disease Control 1997 Annual Report

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Enteric Diseases

Hepatitis A was the disease most commonly reported to the Bureau of Communicable Disease Control from across the state this year (as was also the case in 1996), making up 24.7 percent of diseases reported . The majority of the cases occurred in the Southwestern Health District and there seems to be a greater association of hepatitis A with the use of drugs such as methamphetamines than in previous years.

Food safety has become an increasingly important issue at both the state and federal levels. Enteric diseases are some of the most commonly experienced illnesses and are often associated with foodborne exposures.

Cryptosporidiosis increased 8.6 percent from 35 cases in 1996 to 38 in 1997. The largest number of cases (15) was reported from the Southwestern Health District. The Central Health District reported the second highest number of cases (11). All reports were individual cases; there were no reported outbreaks during 1997. Cryptosporidiosis was made reportable in April 1996.

The number of cases of *E. coli* O157:H7 dropped statewide by 21.6 percent from an all-time high of 74 in 1996 to 58 in 1997. The reported total of 58 cases is 45.0 percent above the five-year median of 40 cases. The five-year median is calculated using the annual totals from 1992 to 1996. See Figure 1. The Central and Northwestern health districts saw increases from last year; all other districts had decreases in the number of cases. The highest number of cases (22) was reported in the Eastern Health District, perhaps because one of the major children's hospitals in St. Louis routinely tests for this pathogen. Central and Northwestern health districts tied for the second highest number of cases (14). See Figure 2. *E. coli* was made reportable in midyear 1992, and 1997 is the fifth complete year of reporting. By 1998, the analysis of trends for this disease will be more meaningful. There is still significant underdetection and underreporting of this pathogen, which prospective studies in other states have found to be more common than shigella.[1]

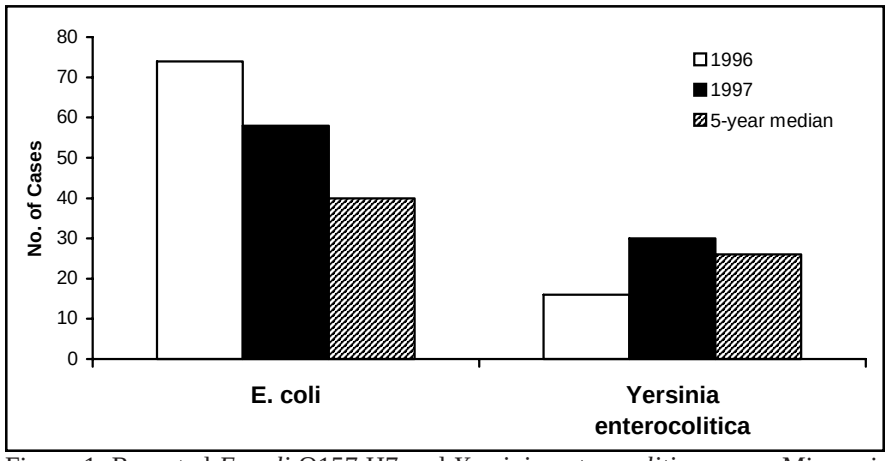

Figure 1. Reported *E. coli* O157:H7 and *Yersinia enterocolitica* cases, Missouri, 1996, 1997 and five-year median.

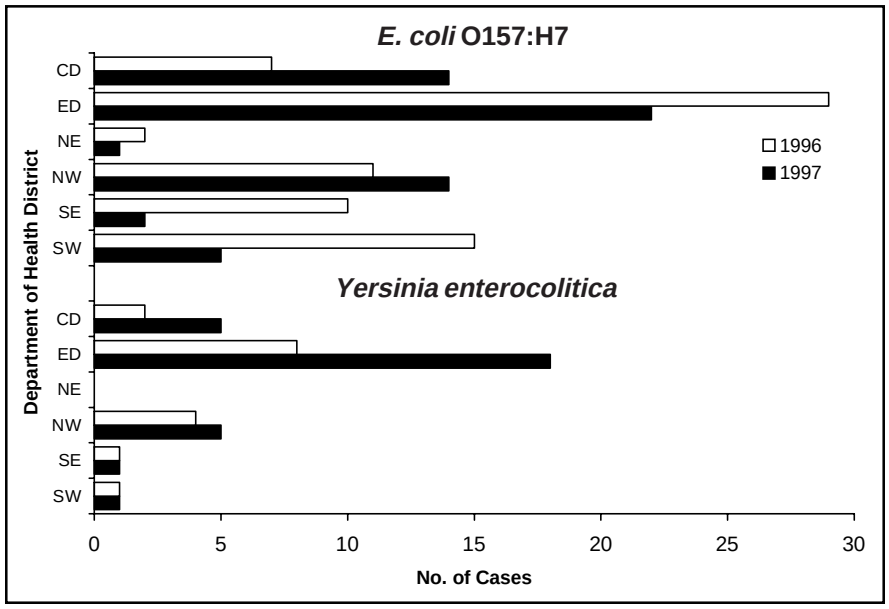

Figure 2. Reported *E. coli* O157:H7 and *Yersinia enterocolitica* cases by Department of Health districts, Missouri, 1996 and 1997.

The number of reported cases of *Yersinia enterocolitica* increased 87.5 percent from 16 cases in 1996 to 30 cases in 1997. These 30 cases are 15.4 percent higher than the five-year median of 26 cases. See Figure 1. As in the past, the largest number of cases was reported among black children in the Eastern Health District (see Figure 2) during the Thanksgiving and Christmas holidays, but a large number of cases were reported from other groups and throughout the remainder of the year.

Key to Department of Health Districts:

CD = Central Health District
ED = Eastern Health District
NE = Northeastern Health District
NW = Northwestern Health District
SE = Southeastern Health District
SW = Southwestern Health District

Reported campylobacter cases increased from 554 in 1996 to 574 in 1997, a change of 3.6 percent. The reported total of 574 cases is 6.5 percent lower than the five-year median of 614 cases. See Figure 3. Central, Northeastern, Southeastern and Southwestern health districts showed an increase in the numbers of reported cases. See Figure 4

Salmonellosis showed a small change in the state total, rising from 565 cases in 1996 to 568 cases in 1997. There was a large increase of 67.7 percent in the Northwestern Health District, largely due to a large restaurant outbreak of *S. agona*. All other health districts experienced decreases in reported cases of salmonella. See Figure 4. The most common serotypes of salmonella reported in 1996 and 1997 are shown in Table 1 on page 16.

Missouri's 1997 reports of shigellosis decreased dramatically by 42.6 percent from 387 cases in 1996 to 222 cases. A large decrease was also seen in 1996, when cases dropped by 66.0 percent from 1,138 reported during 1995. The 1997 incidence was 66.1 percent lower than the five-year median of 654 cases. See Figure 3. In the past, high levels of shigellosis have been associated with hepatitis A outbreaks because the two diseases have similar risk factors. Immunity following infection with shigella is of unknown duration, and increases in shigellosis cases, particularly in urban areas, may be associated with waning levels of protection. Thus, previously infected individuals could again be placed at risk, as well as cohorts of very young, previously unexposed children who are susceptible to infec-

(continued on page 12)

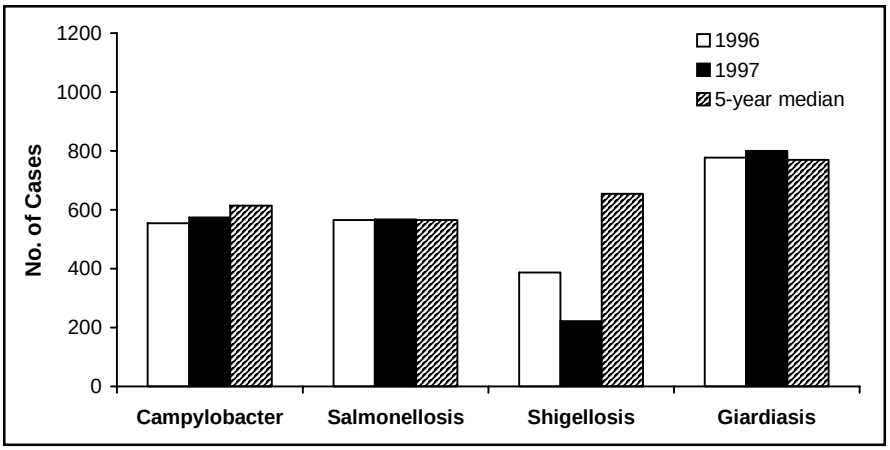

Figure 3. Reported campylobacter, salmonellosis, shigellosis and giardiasis cases, Missouri, 1996, 1997 and five-year median.

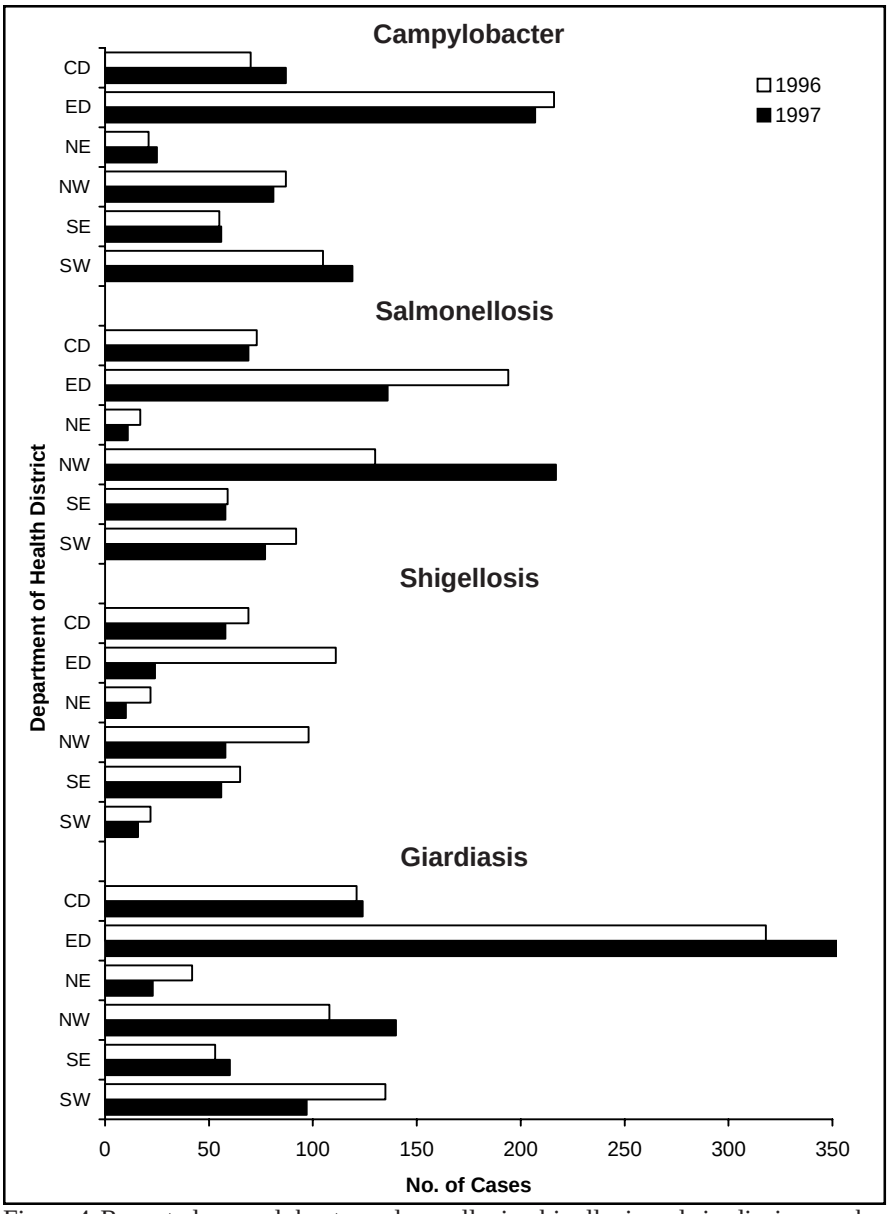

Figure 4. Reported campylobacter, salmonellosis, shigellosis and giardiasis cases by Department of Health districts, Missouri, 1996 and 1997.

(continued from page 11)
tion.[2] The most common species implicated in outbreaks in the United States is *S. sonnei*. All health districts demonstrated a reduction in the number of cases of shigellosis from 1996 to 1997. The largest reduction (78.4%) was seen in the Eastern Health District and the second largest reduction (41.8%) occurred in the Northwestern Health District. See Figure 4.

Parasites

Giardiasis increased slightly (3.0%) from 777 cases in 1996 to 800 cases in 1997. The cases for 1997 were 3.9 percent above the five-year median of 770 cases. See Figure 3. Cases increased in the Central, Eastern, Northwestern and Southeastern health districts, but decreased in the Northeastern and Southwestern health districts during 1997. The largest increase (29.6%) was noted in the Northwestern Health District while the largest decrease (28.1%) occurred in the Southwestern Health District. See Figure 4.

Viral Hepatitis

Overall, cases of hepatitis A in the state of Missouri decreased by 18.6 percent from 1,414 in 1996 to 1,151 in 1997. The 1997 total was 18.6 percent below the five-year median of 1,414 cases. See Figure 5. The Southwestern Health District reported the largest number of cases (524), representing 45.5 percent of the state's total. This was a decrease of 16.7 percent for this district from the 629 cases reported in 1996. A large decrease of 46.9 percent was seen in the Eastern Health District, where cases dropped from 262 in 1996 to 139 in 1997. An increase of 40.0 percent was observed in the Northeastern Health District with cases rising from 35 in 1996 to 49 in 1997. All health districts except the Northeastern Health District showed a decrease or no change from the preceding year. See Figure 6.

Hepatitis B increased statewide by 10.4 percent, from 326 cases in 1996 to 360 cases in 1997. The 1997 total was 32.7 percent lower than the five-year median of 535 cases. See Figure 5. The largest increases were observed in the Central (75.0%), Northwestern (51.3%) and Southwestern (38.8%) health districts. A decrease of 17.6 percent was noted in the Eastern Health District. See Figure 6.

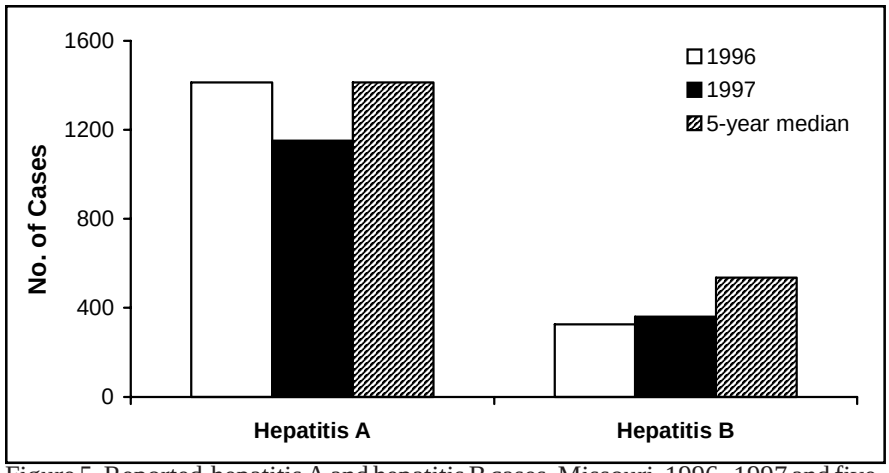

Figure 5. Reported hepatitis A and hepatitis B cases, Missouri, 1996, 1997 and five-year median.

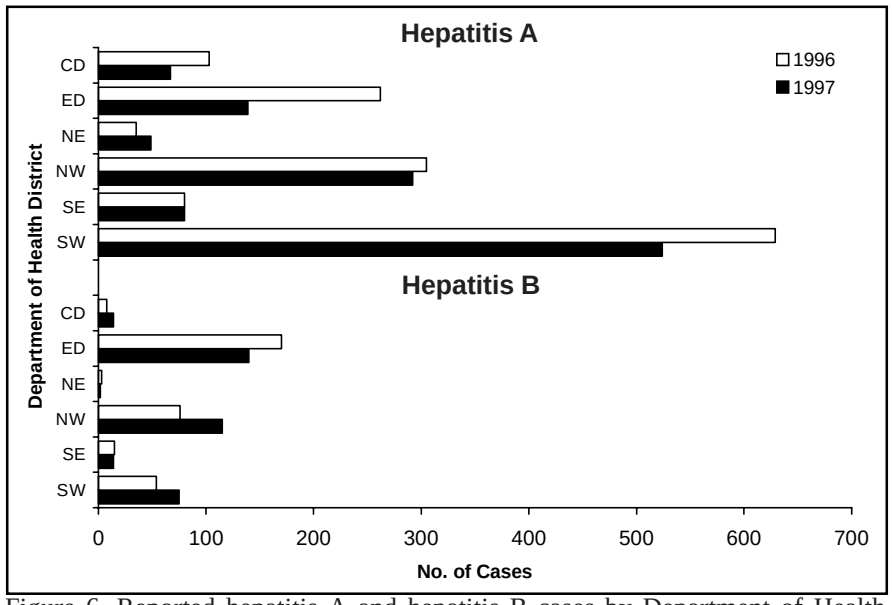

Figure 6. Reported hepatitis A and hepatitis B cases by Department of Health districts, Missouri, 1996 and 1997.

Meningococcal Disease

Invasive meningococcal disease caused by *Neisseria meningitidis* recovered from a normally sterile site is reportable in Missouri. The reported conditions may include bacteremia, septicemia, and others as well as meningitis. Before 1994, meningococcal meningitis was the only reportable condition for infection with this organism. The number of meningococcal meningitis cases increased statewide from 1992 through 1996 (31 cases in 1992, 34 in 1993, 43 in 1994, 54 in 1995 and 57 in 1996). In 1997, the reported total of 43 cases was 24.6 percent below the 1996 total and was equal to the five-year median. See Figure 7. The Northeastern and Southwestern health districts reported increases in meningococcal meningitis in 1997. The Central, Eastern and

Northwestern health districts reported decreases in the number of cases. The Southeastern Health District reported no change in the number of cases. See Figure 8. Most of the meningococcal meningitis cases were reported from large metropolitan areas in the Eastern (19 cases), Northwestern (7 cases) and Southwestern (8 cases) health districts.

Since becoming reportable in 1994, the number of invasive meningococcal disease cases other than meningitis increased annually except for one year (35 cases in 1994, 22 in 1995, 41 in 1996 and 63 in 1997). The 1997 total represented a 53.7 percent increase over the preceding year. There is not yet a five-year median for other invasive meningococcal disease. See Figure 7. The Central, Eastern, Northeastern, Northwestern and Southwestern health districts reported increases in the number of cases in 1997. The Southeastern Health District reported a 58.3 percent decrease from 12 cases in 1996 to 5 in 1997. See Figure 8. The most cases again occurred in large metropolitan areas in the Eastern (22 cases), Northwestern (15 cases) and Southwestern (9 cases) health districts. The Northwestern Health District reported a 400 percent increase from 3 to 15 cases. The 1996 and 1997 comparison indicates increased disease and/or better reporting in older individuals.

Aseptic Meningitis

Aseptic meningitis can be caused by any of a large number of agents (mostly viral). While individual cases are reportable, physicians should particularly report clusters or outbreaks of this disease because of the need to determine the causative organisms and transmission modes. Aseptic meningitis decreased by 17.5 percent from 120 in 1996 to 99 in 1997. The 1997 statewide total was 58.6 percent lower than the five-year median of 239 cases. See Figure 7. Decreases were seen in all districts except the Eastern and Northeastern health districts. See Figure 8.

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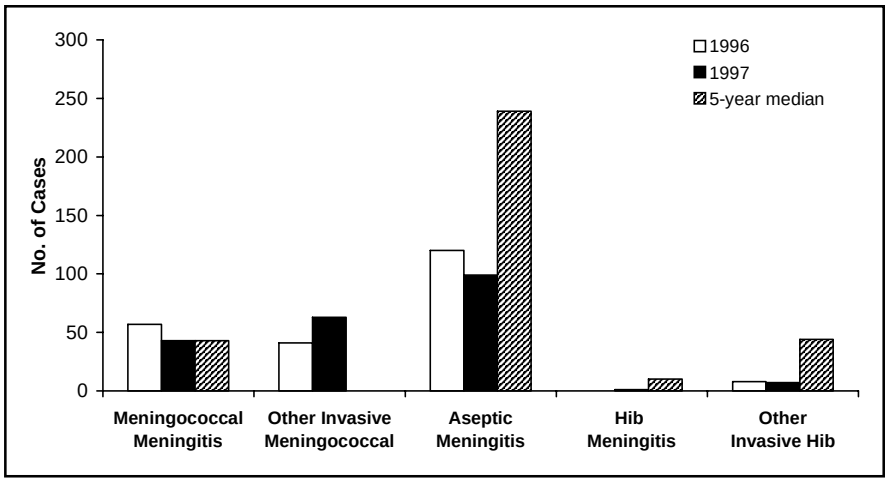

Figure 7. Reported meningitis and other invasive disease, Missouri, 1996, 1997 and five-year median.

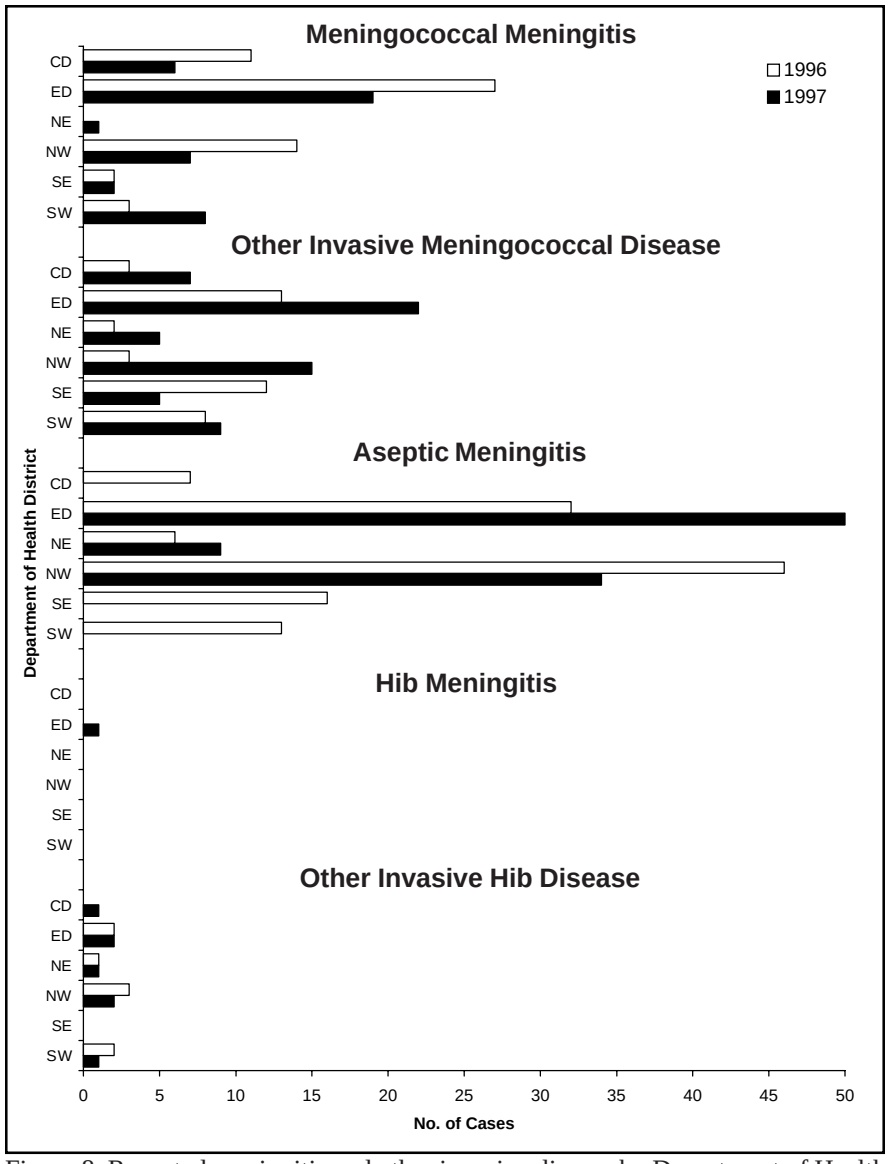

Figure 8. Reported meningitis and other invasive disease by Department of Health districts, Missouri, 1996 and 1997.

Hazardous Substances Emergency Events Surveillance 1997 Annual Report

Carol Braun
Office of Surveillance

The Hazardous Substances Emergency Events Surveillance (HSEES) system, established by the federal Agency for Toxic Substances and Disease Registry (ATSDR) in 1990, collects information on the direct public health impact of emergency events involving hazardous substances. Missouri's HSEES program has completed its fourth year of data collection. As the program continues, new notification sources are explored and information is shared and analyzed to determine the public health impact of emergency events involving the release of hazardous substances in the state.

All Missouri HSEES data are transmitted to ATSDR for analysis with the data collected from the other 13 participating states. Personal/company identifiers are not transmitted to or maintained by ATSDR to protect the confidentiality of program participants.

Because the intent of the HSEES program is to reduce the morbidity and mortality related to hazardous substances emergency events, it is important that the public, emergency responders, employees and industries receive feedback from the program concerning case investigations. In those cases where development of intervention strategies might prevent similar future incidents, specific summary investigation reports are prepared and distributed to the community involved. When appropriate, health education programs to promote prevention strategies are conducted for the affected industry, local emergency planning committees, emergency responders, etc.

This report was supported by funds from the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) trust fund provided to the Missouri Department of Health under Cooperative Agreement Number U61/ATU780955-02 from the Agency for Toxic Substances and Disease Registry, Public Health Service, U.S. Department of Health and Human Services.

Case Definition for Hazardous Substance Release

A hazardous substance release is entered in the HSEES system if it meets the following criteria:

1. An uncontrolled or illegal release or threatened release of one or more hazardous substances; and
2. The substances that are actually released or threatened to be released include ALL hazardous substances except petroleum products; and
3. The quantity of the hazardous substances that are released, or are threatened to be released, need (or would need) to be removed, cleaned up, or neutralized according to federal, state or local law; or
4. Only a threatened release of hazardous substances exists, but this threat leads to an action such as an evacuation that can potentially impact on the health of employees, responders or the general public. This action makes the event eligible for inclusion into the surveillance system even though the hazardous substances are not released.

Analysis of Data on Hazardous Substances Emergency Events

In calendar year 1997, a total of 2,272 potential environmental emergencies were reported to the HSEES office. Of this total, 1,680 (73.9%) were environmental emergency response reports received from the Missouri Department of Natural Resources' Environmental Services Program. The United States Coast Guard's National Response Center provided 573 (25.2%) reports, the Missouri Highway Patrol sent 17 (0.7%) notifications, and there was one (<1%) report each from the Missouri Department of Health and the media. Of the 2,272 reports received, 183 (8.1%) were considered to be hazardous substance releases (see sidebar) and were entered into the HSEES database for follow-up.

Of the 183 events classified as hazardous substance releases, 169 (92.3%) involved the release of only one hazardous substance. The most commonly released substance was ammonia, occurring in 22 events. Other commonly released substances and number of occurrences were PCBs (11), pesticides (9), paint (6) and chlorine (5).

Events were scattered throughout the state, occurring in 54 counties and the City of St. Louis. This represents 47% of the counties in the state. Events occurred primarily in counties where there are larger cities, interstate highways and large manufacturing or mining facilities. See Figure 1 for the number of events occurring in each county.

One hundred thirteen (61.7%) of the releases occurred in fixed facilities while 70 releases (38.3%) were transportation-related. Of the 70 transportation releases, 55 (78.6%) were ground transportation, 12 (17.1%) were rail transportation and three (4.3%) were pipeline.

Of the 183 events, 150 (82.0%) occurred on weekdays and 33 (18.0%) occurred on weekends. One hundred thirty events (71.0%) occurred between 6 a.m. and 6 p.m., with 99 (54.1%) occurring between the core working hours of 8 a.m. and 5 p.m. Fourteen events (7.7%) occurred between 12:01 a.m. and 5:59 a.m., and 24 (13.1%) occurred between 6:01 p.m. and 11:59 p.m. Time of event was unknown for 15 (8.2%) events.

Evacuations were ordered by an official in 17 (9.3%) events. Ten evacuations involved a total of 1,553 people. The number of people evacuated in seven events is unknown. Eleven evacuations involved a building or an affected part of a building, four evacuations were within a specified radius of a release, and two evacuations were downwind.

Thirteen (7.1%) releases involving 12 different substances resulted in 23 persons with single or multiple injuries (41 total injuries). The largest number of victims associated with a release was five. The most common types of injuries reported were nausea/vomiting (6), headache (6), trauma (5), and eye irritation (5). Injuries experienced also included chemical burns, skin irritation, thermal burns, and respiratory irritation. See Figure 2.

Of the 23 victims, nine were employees, seven were members of the general public, two were policemen, two were professional fire fighters, two were volunteer fire fighters and one victim's occupation is unknown.

Six persons were treated at the scene of the event, seven were admitted to a hospital, six were treated at but not admitted to a hospital, three were transported to a hospital for observation but received no treatment, and one person died. The death occurred in a transportation-related event, and it was determined that the death was attributable to the trauma of the accident, which involved the release of 40,000 pounds of acetone. A traffic accident was the event with the largest number of victims (5) who suffered a total of 11

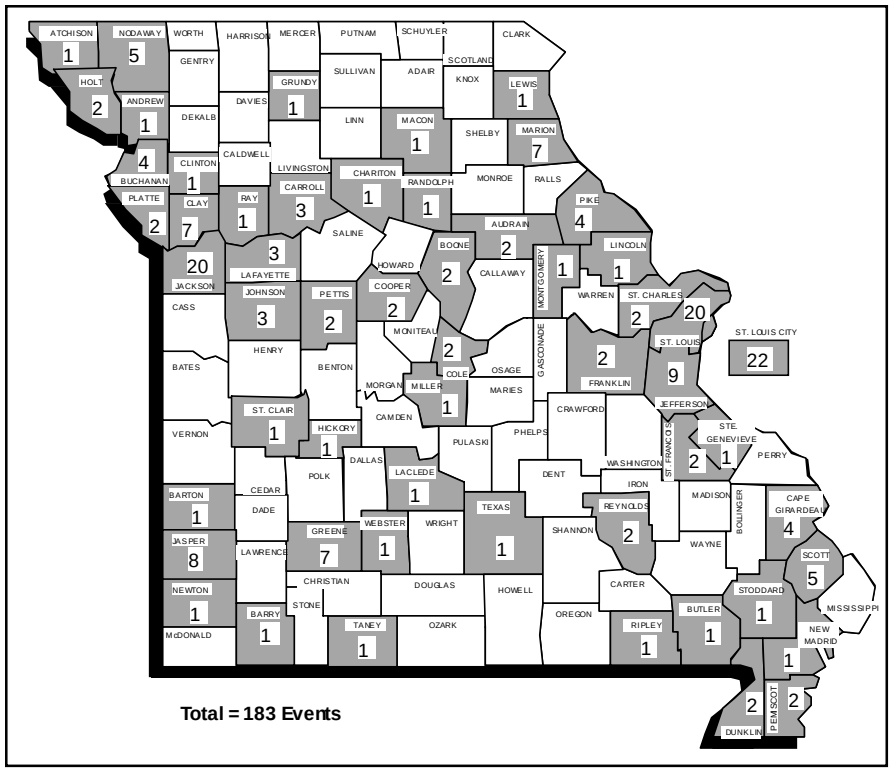

Figure 1. Location of non-petroleum hazardous substances emergency events by county, Missouri, 1997.

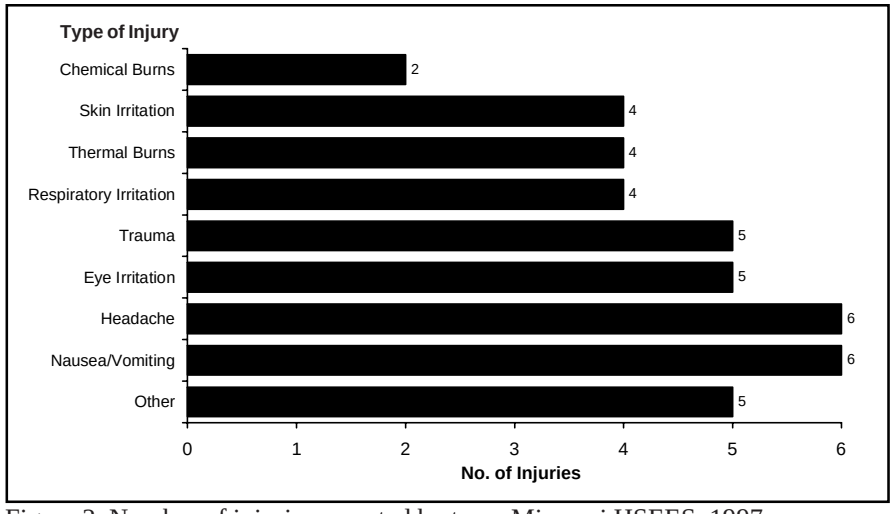

Figure 2. Number of injuries reported by type, Missouri HSEES, 1997.

injuries. In this accident, a car with four passengers from the general public struck a pickup truck transporting a pesticide used for spraying roadside vegetation. The driver of the truck was an employee. The actual amount of pesticide released was unknown. Injuries included trauma, nausea, headache, cuts and bruises. In a separate incident involving the release of pesticide, one person was injured, making events involving pesticides the number one injury-related category for the year. In another event, a cylinder containing methyl bromide was found by a construction crew when tearing down an abandoned building. When a valve on the cylinder was opened by the investigating responders, two volunteer fire fighters, a police officer, and a member of the public experienced eight injuries, including nausea, skin irritation,

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and headache. A combination of formaldehyde and potassium hydroxide caused five injuries to three victims in one event. One event involving chlorine caused two injuries to two victims. The remaining hazardous substance releases associated with injuries involved one victim each. See Figure 3.

Reporting Events

The Missouri HSEES program is indebted to the Missouri Department of Natural Resources' Environmental Services Program for helping to investigate these hazardous substances emergency events. The program relies heavily on this unit for notification of releases and frequently contacts them for circumstances surrounding a release.

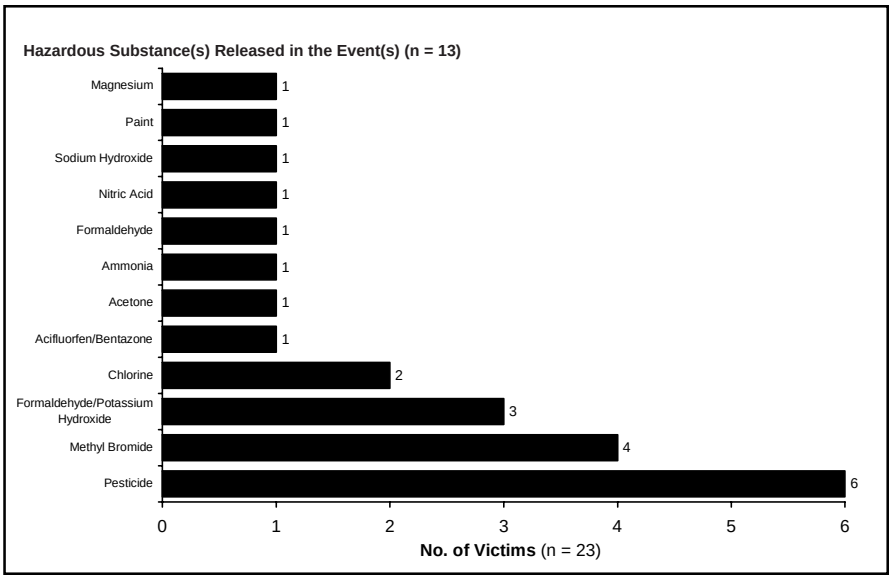


Figure 3. Number of victims by hazardous substance released, Missouri HSEES, 1997.

If you are aware of an emergency event involving the release of non-petroleum, hazardous substances that may not have been reported to the Missouri Department of Natural Resources, please contact: Carol Braun, HSEES Coordinator, Missouri Department of Health, P.O. Box 570, Jefferson City, MO 65102-0570, Ph: (573) 751-9071.

Communicable Disease Control 1997

(continued from page 13)

Haemophilus influenzae type b (Hib) Disease

One case of Hib meningitis in a 1-year-old boy was reported in Missouri (Eastern Health District) during 1997. No cases were reported in 1996, while 1995 had ten cases (6 in children and 4 in adults) and 1996 had seven cases (4 in children and 3 in adults). The five-year median value for this disease is ten cases. See Figure 7 on page 13.

Reported cases of invasive Hib disease other than meningitis decreased by 12.5 percent from eight (2 in children and 6 in adults) in 1996 to seven (2 in children and 5 in adults) in 1997. Invasive Hib disease other than meningitis was 84.1 percent below the five-year median of 44 cases. See Figure 7. The Southeastern Health District had no cases; each of the other health districts had one or two cases. See Figure 8 on page 13. Cases of invasive Hib disease other than meningitis have steadily decreased since 1993.

Table 1. Most common reported *Salmonella* serotypes, Missouri, 1996 and 1997

	1996			1997		
	Serotype	No. of Cases	Percent	Serotype	No. of Cases	Percent
1.	*S. typhimurium*	134	23.7%	*S. typhimurium*	105	18.5%
2.	*S. enteritidis*	64	11.3%	*S. agona*	84	14.8%
3.	*S. braenderup*	46	8.1%	*S. enteritidis*	35	6.2%
4.	*S. newport*	36	6.4%	*S. montevideo*	27	4.8%
5.	*S. heidelberg*	23	4.1%	*S. heidelberg*	23	4.0%
6.	*S. javiana*	12	2.1%	*S. infantis*	20	3.5%
7.	*S. infantis*	11	1.9%	*S. newport*	17	3.0%
8.	*S. oranienburg*	10	1.8%	*S. hadar*	11	1.8%
9.	*S. poona*	10	1.8%	*S. thompson*	9	1.6%
10.	*S. agona*	8	1.4%	*S. anatum*	8	1.4%
11.	*S. thompson*	8	1.4%	*S. poona*	8	1.4%
				S. 4,5:1:-monophasic	8	1.4%
	All Others	203	36.0%	All Others	213	37.5%
	Total	**565**	**100.0%**	**Total**	**568**	**100.0%**

REFERENCES:

1. Centers for Disease Control and Prevention. *E coli* O157:H7–what the clinical microbiologist should know. Atlanta, GA: US Department of Health and Human Services, Public Health Service, March 1994.
2. Lee LA, Shapiro CN, Hargrett-Bean N, et al. Hyperendemic shigellosis in the United States: A review of surveillance data for 1967–1988. J Infect Dis 1991;164:894–900.

Vaccine-Preventable Disease 1997 Annual Report

Susan Denny
Section of Vaccine Preventable and Tuberculosis Disease Elimination

The incidence of almost all vaccine-preventable diseases in Missouri has continued to decline. Safe, effective vaccines have played the major role in this reduction. The mission of the section is to ensure that these vaccines are widely distributed in order to prevent, control and eliminate vaccine-preventable diseases. As the incidence of these diseases decreases, collection and reporting of complete and accurate information on remaining cases is increasingly important. By analyzing information obtained on these cases, it will be possible to gain a better understanding of the factors that allow disease transmission despite high immunization rates.

"The occurrence of vaccine-preventable diseases in a community may be a sentinel event that signals the presence of an un- or underimmunized population within the community. Such populations may be small, access health care infrequently, or otherwise be difficult to identify. As disease incidence continues to decrease in this country, continued reductions will require better understanding of the factors that allow vaccine-preventable diseases to continue to occur."[1]

Complete and accurate reporting by all health care providers is essential in order to acquire that understanding. The Bureau of Immunization is responsible for surveillance of pertussis, diphtheria, tetanus, measles, mumps, poliomyelitis and rubella, as well as *Haemophilus influenzae* type b in children under age 15. Surveillance of three other vaccine-preventable diseases, hepatitis A, hepatitis B and *Haemophilus influenzae* type b in adults, is conducted by the Bureau of Communicable Disease Control. Information on the incidence of those diseases can be found in the Bureau of Communicable Disease Control 1997 Annual Report found on pages 10–13 and 16 of this issue.

In 1997, there were no reported cases of diphtheria, tetanus, polio or mumps in Missouri. There was one case of measles in a 4-year-old boy who had been previously immunized; one case of *Haemophilus influenzae* type b in a 1-year-old boy; and two cases of rubella, one in a 19-month-old girl and another in a 28-year-old man, both of whom had been previously immunized.

In 1997, 80 cases of pertussis were reported in Missouri, compared to 74 cases in 1996 and 63 in 1995. Pertussis was a complication associated with AIDS in the death of one infant. The majority (76%) of the pertussis cases were in children less than 1 year of age, 12 percent were in children between the ages of 1 and 5, and the remaining cases were in children between the ages of 5 and 14.

Incomplete immunization coverage is not the only reason that cases of pertussis continue to occur. The Advisory Council on Immunization Practices recommends an optimum of five doses of pertussis vaccine for children through age 6. But even if a person is fully immunized by age 7, immunity eventually wanes. However, it is not recommended that persons over age 7 receive routine pertussis vaccination because adverse reactions to the vaccine are thought to be more frequent, and pertussis-associated morbidity and mortality decrease with age.

The Department of Health is working with both public and private health care providers to appropriately immunize 90 percent of Missouri's 2-year-olds. As the department works toward this goal, good surveillance data will greatly enhance its ability to identify individuals and communities in which immunization rates need to be improved.

REFERENCE:

1. Wharton M. Disease Reduction Goals. Manual for the Surveillance of Vaccine-Preventable Disease. Atlanta, Ga: National Immunization Program, Centers for Disease Control and Prevention, 1997:1–5.

Tuberculosis in 1997

(continued from page 3)
of active disease patients were placed on the four-drug regimen. This improved to 67.9 percent in 1996 and to 75.0 percent in 1997. However, much work remains in order to reach 100 percent compliance.

Directly observed therapy (DOT) has been adopted as the standard of care in Missouri. Our emphasis is on placing all active disease patients on DOT to ensure that treatment is completed. In areas where there are few active disease cases, steps should be taken to put patients with tuberculosis infection on directly observed preventive therapy (DOPT). These strategies involve watching people swallow their pills. Our first priority is to motivate people to come to the local health department for DOT/DOPT. However, if this is not possible, we must go to the patient. Community volunteers can be recruited to assist the local health department in conducting DOPT. Volunteers may include family, friends, neighbors, local ministers, retired persons, pharmacists, school nurses, staff in physician offices and other individuals. In 1995, 58.4 percent of active disease patients were placed on DOT. This improved to 74.1 percent in 1996, and to 76.6 percent in 1997. However, additional efforts must be undertaken in order to reach our goal of 100 percent. This will require the commitment and creativity of all those involved.

Missouri's goal is to have no more than 175 new tuberculosis cases annually by the year 2000, and to then eliminate tuberculosis in the state by the year 2010.

State Public Health Laboratory - 1997 Annual Report

Metabolic Disease Screening

Infants screened 76,810
- Presumptive positives:
- PKU 9
- Hypothyroidism 260
- Galactosemia 36
- Sickle Cell 50
- Other hemoglobinopathies 1,414

Serology/Virology

HIV Serology 76,745
- HIV antibody positive 648

Syphilis Serology 24,873
- Sero-confirmed reactive 832

Hepatitis A Serology 1,270
- Positive 277

Hepatitis B Serology 7,663
- Positive 165

Measles, Mumps and Rubella (Diagnostic Serologies) 9,235
- Measles (IgM positive) 5
- Mumps (significant rise in titer) 0
- Rubella (IgM positive) 0
- Prenatal rubella screens 9,202
  - Nonreactive patients 1,235

Viral Isolation 1,584
- Influenza isolates 41
- Enterovirus isolates 9
- Herpes isolates 410

Rabies 2,493
- Positive specimens 37

Microbiology

Enterics 1,784
- *Salmonella* 776
- *Shigella* 182
- *Campylobacter jejuni* 19
- *E. coli* O157:H7 71

Parasitology 2,998
- Ova/parasites found 719

Reference Bacteriology 1,600
- *Francisella tularensis* 11
- *Haemophilus influenzae* 12
- *Neisseria meningitidis* 98
- *Bordetella pertussis* 99

DNA Probe for Chlamydia/Gonorrhea 104,286
- *N. gonorrhoeae* 1,419
- *Chlamydia trachomatis* 4,924

Tuberculosis 9,885
- Positive Cultures 590

Environmental Testing

Chemistry 16,719
- Blood lead samples 12,139
- Total analyses 25,394
- Blood lead ≥20 µg/dL 212
- Environmental lead samples 329

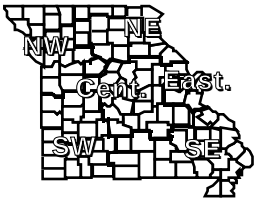
Bacteriology—Water

Private Samples 10,487
- Coliform positive 2,593

Public Supplies 59,031
- Coliform positive 1,975
- *E. coli*/fecal coliform positive 193

Swimming Pools 1,508

Food/Dairy/Beverage 3,360
- Excessive bacteria, coliform, yeast and mold 99



Missouri Department of Health
Division of Environmental Health and Communicable Disease Prevention
QUARTERLY REPORT

Reporting Period *
October - December, 1997

	Districts							KANSAS CITY	ST. LOUIS CITY	ST. LOUIS CO.	SPGFLD GREENE CO.	3 MONTH STATE TOTALS		CUMULATIVE		
	** NW	NE	CD	SE	** SW	** ED	*** OTHER					1997	1996	FOR 1997	FOR 1996	5 YR MEDIAN
Vaccine Preventable Dis.																
Diphtheria	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0
Hib Meningitis	0	0	0	0	0	0		0	1	0	0	1	0	1	0	10
Hib Other Invasive	1	1	0	0	0	0		1	0	0	0	3	1	7	8	44
Influenza	3	0	0	11	3	5		1	8	6	6	43	126	270	283	272
Measles	0	0	0	0	0	0		0	0	0	0	0	0	1	3	2
Mumps	0	0	0	0	0	0		0	0	0	0	0	4	0	10	30
Pertussis	3	0	2	3	2	1		3	4	3	0	21	39	80	74	74
Polio	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0
Rubella	0	0	1	0	0	0		0	1	0	0	2	0	2	0	1
Tetanus	0	0	0	0	0	0		0	0	0	0	0	0	0	1	1
Viral Hepatitis																
A	75	8	23	46	43	3		12	3	8	67	288	512	1151	1414	1414
B	8	1	7	2	21	1		8	34	6	13	101	106	360	326	535
Non A - Non B	1	0	0	0	0	0		0	0	0	0	1	4	4	23	25
Unspecified	0	0	0	0	0	0		0	0	0	0	0	0	1	0	1
Meningitis																
Meningococcal	1	0	0	0	2	0		2	1	1	0	7	12	43	57	43
Enteric Infections																
Campylobacter	18	7	25	9	18	7		5	7	18	12	126	110	574	554	614
Salmonella	23	5	15	15	16	17		11	4	15	6	127	151	568	565	565
Shigella	13	1	1	9	8	0		3	1	2	0	38	75	222	387	654
Typhoid Fever	0	0	0	0	0	0		0	0	0	0	0	0	1	2	2
Parasitic Infections																
Giardiasis	24	6	34	14	27	33		17	50	40	10	255	234	800	777	770
Sexually Transmitted Dis.																
AIDS	6	1	3	6	4	9	10	42	38	28	5	152	247	501	845	178
Gonorrhea	70	15	138	112	57	41		564	750	369		2116	2110	7658	8415	3211
Prim. & Sec. syphilis	0	0	0	2	0	1		1	16	7		27	38	118	221	195
Tuberculosis																
Extrapulmonary	0	0	0	1	1	0	0	2	5	4	1	14	15	47	41	12
Pulmonary	4	0	4	12	1	4	0	4	18	15	4	66	59	201	183	59
Zoonotic																
Psittacosis	0	0	0	0	0	0		0	0	0	0	0	0	1	1	1
Rabies (Animal)	3	1	1	2	0	1		0	0	0	1	9	3	31	26	27
Rocky Mtn. Sp. Fever	0	0	0	0	2	0		0	0	0	0	2	6	24	19	20
Tularemia	1	2	1	0	1	0		1	0	1	0	7	0	18	9	24

TEAR OUT FOR FUTURE REFERENCE

Low Frequency Diseases

Anthrax
Botulism
Brucellosis
Chancroid
Cholera
Cryptosporidiosis - 10
Encephalitis (infectious) - 4
Encephalitis (viral/arbo-viral)
Granuloma Inguinale
Kawasaki Disease - 3
Legionellosis - 19
Leptospirosis
Lymphogranuloma Venereum
Malaria - 7
Plague
Rabies (human)
Reye Syndrome
Rheumatic fever, acute
Toxic Shock Syndrome - 3
Trichinosis

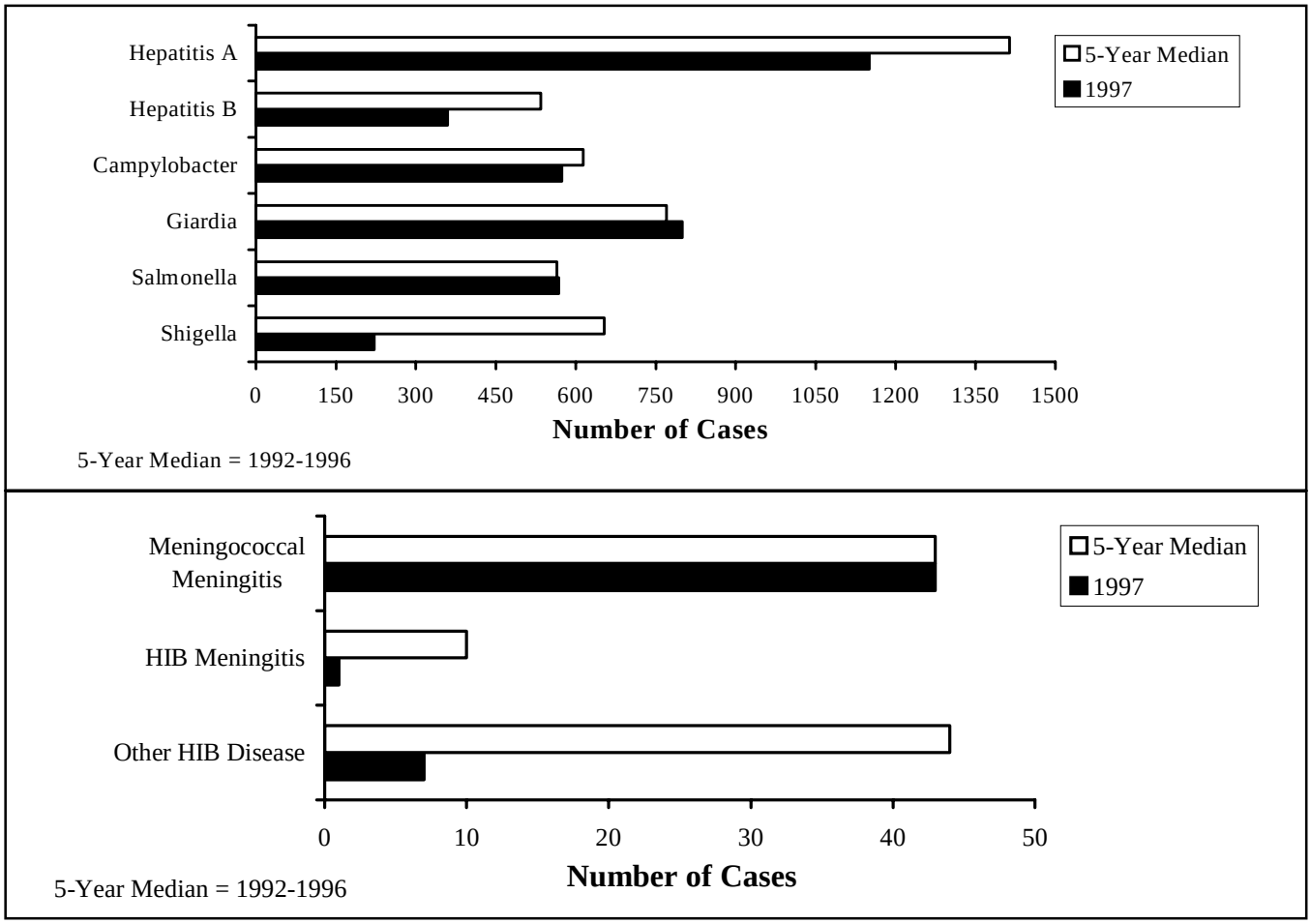
Outbreaks

Foodborne - 3
Waterborne
Nosocomial - 3
Pediculosis - 1
Scabies - 4
Other
Hepatitis A - 1
AGI - 3
Ringworm - 1

*Reporting Period Beginning September 28, 1997, Ending January 3, 1998.
**Totals do not include KC, SLC, SLCo, or Springfield
***State and Federal Institutions

Due to data editing, totals may change.

Disease Reports, January–December 1997 and 5-Year Median



Viral Hepatitis

During the January/December 1997 time period, hepatitis A cases decreased to 1,151 cases, which is a 18.6% decline from the 1,414 cases reported in 1996. This is also a 18.6% decline from the five-year median of 1,414. The Southwestern Health District reported the largest number of cases (524), representing 45.5% of the state's total; however, this also represented a 16.7% decline from 629 cases reported in this district in 1997.

Hepatitis B showed a narrow 10.4% rise from 326 cases in 1996 to 360 cases in 1997. However, the total of 1997 cases was 32.7% lower that the five-year median of 535 cases.

Enterics

Campylobacter increased slightly by 3.6% during 1997, from 554 cases in 1996 to 574 cases in 1997. The total number of 1997 cases declined 6.5% from the five-year median of 614 cases. Salmonella increased by only 0.53% from 565 cases in 1996 to 568 in 1997. The 568 cases was also a 0.53% rise above the five-year median of 565 cases. Five of the six health districts showed reductions in salmonella cases. However, the cases in the Northwestern Health District rose by 67.7%, largely due to a large restaurant outbreak. Shigellosis cases continue to decline from 387 cases in 1996 to 222 cases in 1997. This is a 42.6% drop. The 222 cases in also a remarkable 66% decline from the five-year median of 654 cases.

Parasites

Giardiasis continued to show incremental increases from 777 cases in 1996 to 800 cases in 1997, a 3% increase. This is also a slight 3.9% increase above the five-year median of 770 cases.

Meningitis

Meningococcal meningitis cases numbered 43 in 1997, equalling the five-year median of 43 cases. This was a 24.6% decrease from 57 cases in 1996.

HIB Disease

Following no cases reported in 1996, one case of *Haemophilus influenzae* type b (Hib) meningitis was reported in Missouri during 1997. The five-year median is 10 cases. The steady decline perhaps represents an effective Missouri Hib vaccination program in the child population. Other invasive cases (non-meningitis) of *Haemophilus influenzae* that may not be affected by the vaccine fell to 7 cases in 1997 from 8 cases in 1996, a 12.5% decline. The 7 cases of other invasive Hib disease reflected a marked decline of 84.1% percent from the five-year median of 44 cases.

Sexually Transmitted Diseases and HIV in Missouri: 1997

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1997 Highlights

- ✔ **Reductions in AIDS Incidence and Death**
- ✔ **Collaborations Between Public/Private Partners, Academia**
- ✔ **Syphilis Outbreak Management**
- ✔ **Continued Statewide Declines in P&S Syphilis**
- ✔ **Missouri Syphilis Epidemic Evaluation Project**
- ✔ **Compliance With Ryan White Care Act Requirements**

Over the past five years, Missouri has developed the capacity to effectively respond to the threat of syphilis, gonorrhea, chlamydia and HIV, and to conduct statewide community planning for sexually transmitted diseases (STD) and human immunodeficiency virus (HIV) prevention. State and federal contributions to overall STD/HIV prevention efforts have increased to reflect the epidemics; yet, these resources have not been sufficient to accommodate the elimination of syphilis in addition to prevention efforts for hepatitis B, human papillomavirus (HPV) and genital herpes. STDs and HIV continue to plague Missourians at alarming rates, particularly among African Americans and youth.

Prevention planning, programming and public health resources remain crucial if Missouri is to achieve the elimination of syphilis and significant decreases in gonorrhea, chlamydia and HIV. Missouri continues directing efforts toward the control and eventual eradication of early syphilis (primary, secondary and early latent). Renewed effort is being placed on the control and prevention of both chlamydia and gonorrhea, with special emphasis on youth and young adult populations. Efforts continue to provide a full range of prevention and intervention services for HIV infection through enhanced collaboration with HIV/AIDS Care and tuberculosis control programs. Through disease intervention and prevention activities, Missouri citizens, families, and communities have a reduced risk from the health threat of STD/HIV infections.

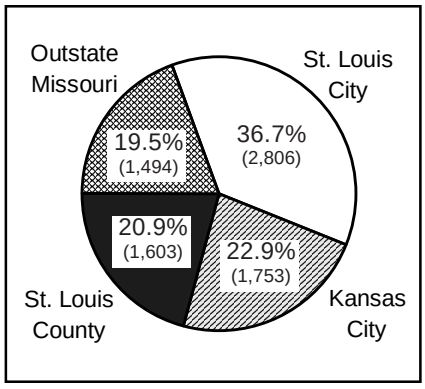

Figure 1. Reported gonorrhea cases by geographic area, Missouri, 1997.

Gonorrhea

In 1997, reported cases of sexually transmitted *Neisseria gonorrhoeae* in Missouri decreased by 9.0 percent from 8,414 cases in 1996 to 7,656 cases in 1997. This represents the ninth consecutive year that reported cases have declined statewide. Figure 1 shows the geographic distribution of gonorrhea cases in 1997. Eighty-four of Missouri's 114 counties reported at least one case of gonorrhea. Each region showed decreases in reported cases from 1996 to 1997: Kansas City, 27.0 percent; St. Louis City, 2.9 percent; Outstate Missouri, 1.5 percent, St. Louis County, 0.7 percent. Missouri Infertility Prevention Project screening efforts detected 18.4 percent (1,408 cases) of all statewide reported sexually transmitted gonorrhea cases.

African Americans and youth continue to be disproportionately impacted among reported gonorrhea cases. African Americans represent 5,423 (70.8%) of the 7,656 reported cases, with a corresponding rate of 989.2 per 100,000 population.* Whites represent 741 reported cases (9.7%) for a rate of 16.5. Young people under 25 made up 64.2% of total reported gonorrhea cases in 1997. See Table 1 and Figure 2.

Missouri's decrease in reported gonorrhea cases parallels an overall national trend. However, Missouri's gonorrhea rate continues to be higher than the national average. In 1996, the rate of gonorrhea cases in Missouri (164.4) was 1.3 times the national rate (124.0).** Additionally, in 1996, St. Louis City ranked fifth nationally with a gonorrhea case rate of 805.7 (2,890 cases).

In an attempt to address high rates of gonorrhea, St. Louis was one of seven sites funded by the Centers for Disease Control and Prevention (CDC) to promote health-seeking behaviors of people at risk for gonorrhea and to improve health care services. "Health-seeking" behaviors include recognizing symptoms, going to a doctor or clinic for care, and completing medication

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* All rates in this article are per 100,000 population.
** Throughout this report, 1996 is the most recent year for which national data are available for STD- and HIV-related conditions.

(continued from page 21)

regimens. Rather than focusing on intervening in the spread of disease (referred to as *primary* prevention), this project focuses on reducing the incidence of gonorrhea by promoting early detection and prompt, effective treatment (*secondary* prevention). Improving health-seeking behaviors and health care delivery will decrease the time individuals are infectious, thus potentially reducing overall transmission rates. Consequences of untreated gonorrhea include infertility and childbirth complications.

Two interventions (or educational programs) will be designed, implemented, and subsequently evaluated. One intervention will be at the community level, aimed at promoting better health seeking behaviors and will involve numerous local agencies and community-based organizations such as homeless shelters, drug treatment centers, churches and recreation centers. Another intervention will target health care providers to promote better provision of health care services. The Missouri Department of Health is also a partner in the Gonococcal Community Action Project (GCAP). GCAP is designed to conduct outreach urine sampling for gonorrhea and chlamydia in high risk populations in St. Louis (see Chlamydia section on page 23).

Table 1. Gonorrhea, Chlamydia and Early Syphilis Cases by Gender, Race, Age Group and Geographic Area, Missouri, 1997.

	GONORRHEA		CHLAMYDIA		EARLY SYPHILIS	
GENDER						
MALES	3,544	46.3%	1,504	12.3%	155	48.4%
FEMALES	4,112	53.7%	10,743	87.7%	165	51.6%
RACE						
WHITE	741	9.7%	3,273	26.7%	37	11.6%
BLACK	5,423	70.8%	4,880	39.8%	276	86.3%
ASIAN	9	0.1%	32	0.3%	0	0.0%
INDIAN	8	0.1%	12	0.1%	1	0.3%
OTHER	43	.6%	23	0.2%	0	0.0%
UNKNOWN	1,432	18.7%	4,027	32.9%	6	1.9%
RACE AND GENDER						
WHITE MALES	200	2.6%	357	2.9%	14	4.4%
BLACK MALES	2,916	38.1%	707	5.8%	137	42.8%
ASIAN MALES	5	0.1%	5	0.0%	0	0.0%
INDIAN MALES	1	0.0%	0	0.0%	1	0.3%
OTHER MALES	19	0.2%	4	0.0%	0	0.0%
UNKNOWN MALES	403	5.3%	431	3.5%	3	0.9%
WHITE FEMALES	541	7.1%	2,916	23.8%	23	7.2%
BLACK FEMALES	2,507	32.7%	4,173	34.1%	139	43.4%
ASIAN FEMALES	4	0.1%	27	0.2%	0	0.0%
INDIAN FEMALES	7	0.1%	12	0.1%	0	0.0%
OTHER FEMALES	24	0.3%	3,596	29.4%	0	0.0%
UNKNOWN FEMALES	1,029	13.4%	19	0.2%	3	0.9%
AGE GROUP						
<10	12	0.2%	13	0.1%	0	0.0%
10–14	133	1.7%	291	2.4%	0	0.0%
15–19	2,526	33.0%	5,649	46.1%	24	7.5%
20–24	2,244	29.3%	4,079	33.3%	68	21.3%
25–29	1,091	14.3%	1,240	10.1%	66	20.6%
30–34	662	8.6%	492	4.0%	57	17.8%
35–39	468	6.1%	207	1.7%	38	11.9%
40+	476	6.2%	137	1.1%	67	20.9%
UNKNOWN	44	0.6%	139	1.1%	0	0.0%
GEOGRAPHIC AREA						
OUTSTATE	1,494	19.5%	4,744	38.7%	93	29.1%
KANSAS CITY	1,753	22.9%	2,657	21.7%	8	2.5%
ST. LOUIS CITY	2,806	36.7%	2,651	21.6%	147	45.9%
ST. LOUIS COUNTY	1,603	20.9%	2,195	17.9%	72	22.5%
TOTAL	**7,656**		**12,247**		**320**	

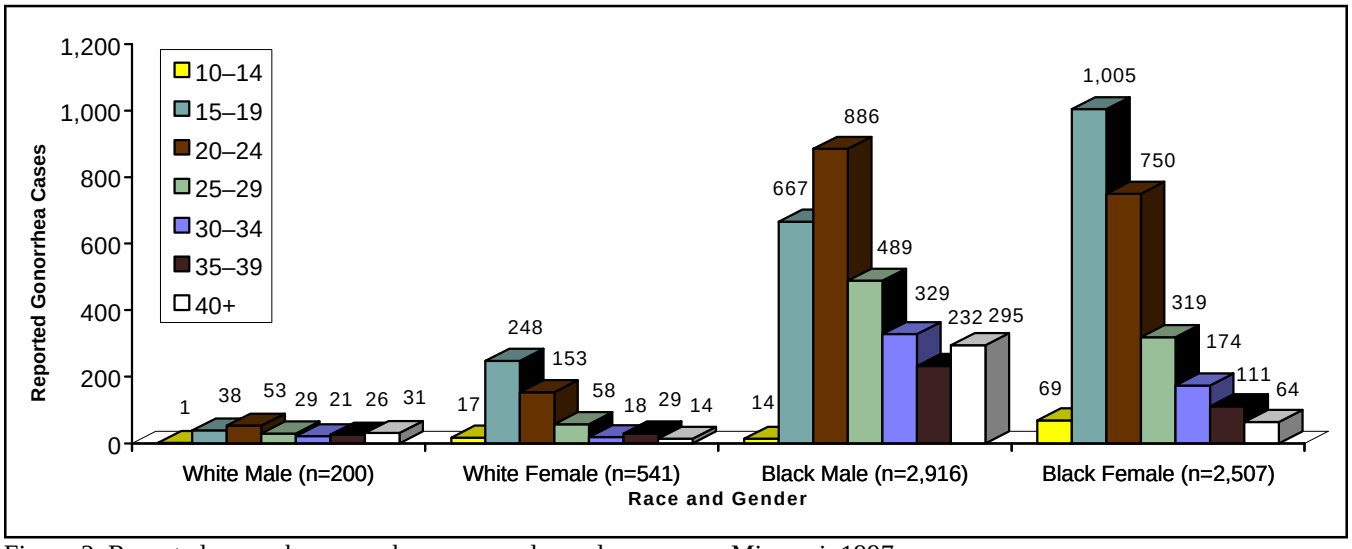

Figure 2. Reported gonorrhea cases by race, gender and age group, Missouri, 1997.

Chlamydia

Reported cases of sexually transmitted *Chlamydia trachomatis* (CT) infections in Missouri increased by 2.6 percent from 11,935 cases in 1996 to ,12,247 cases in 1997. All areas of the state experienced 7.8 percent to 11.7 percent increases in reported chlamydia cases except Kansas City, which reported 1.2 percent fewer cases in 1997 than in 1996.

The Missouri Infertility Prevention Project (MIPP) is an active participant in the Region VII Chlamydia Control Project (CCP), a national surveillance project to prevent STD-related infertility. MIPP is a partnership between the Missouri Department of Health and the Missouri Family Health Council, Missouri's lead Title X/family planning agency. In 1997, the MIPP screened 108,000 individuals for CT infection and reported an overall positivity rate of 4.2 percent, down from 5.1 percent in 1996. In 1997, 40.2 percent (4,920 cases) of statewide sexually transmitted CT infections were reported through MIPP screening activities. As a result of the MIPP, chlamydia screening has expanded. High-risk targeted populations for chlamydia testing are women less than 25 years of age, especially those between 15 and 19. Given the apparent plateauing of chlamydia cases over the past two years since MIPP inception, core populations at risk may have been identified. To amplify the impact of this program, MIPP activities will be gradually shifting from screening to prevention interventions.

During the course of the MIPP project, specific populations at highest risk for chlamydial infection have been identified (especially females less than 25 years of age, who have a 1997 positivity of 5.5 percent compared to 1.0 percent for women 25 years of age and older). Given that MIPP screening efforts will be most effective when focused on high-risk populations, the project has modified its screening criteria to include all women in enrolled clinics under the age of 25. The criteria also called for selective screening of women ages 25 and older.

In late 1997, Missouri began the Gonococcal Community Action Project (GCAP), a collaborative project in St. Louis with Washington University, Grace Hill Neighborhood Services and the St. Louis City Department of Health and Hospitals. Outcomes of GCAP are to identify underserved populations and to evaluate the acceptability of urine outreach sampling. The project is conducting outreach urine sampling for gonorrhea and chlamydia in high risk populations in St. Louis targeting six zip code areas. Preliminary results from this outreach-based screening are outlined in the sidebar.

Due to both MIPP and GCAP activities, youth, specifically females between the ages of 13–24, are disproportionately represented among reported cases of chlamydial infection. Of total cases reported statewide in 1997, 87.7 percent were in females, and 80.0 percent were less than 25 years of age. See Table 1. Since the MIPP focuses on the screening of criteria-based females, and that a majority of CT-infected males are asymptomatic and thus receive only presumptive treatment (no diagnostic testing), it can be deduced that the number of reported CT cases would be significantly higher if males were also screened.

Preliminary Results From the Gonococcal Community Action Project Screening Activities St. Louis, Missouri

Reported through January 29, 1998

Screening sample of 143 persons:

- 3.5% Gonorrhea Positive
- 8.4% Chlamydia Positive
- 2.8% Co-infected with Gonorrhea and Chlamydia
- 33% of Chlamydia Positives are also Positive for Gonorrhea

Congenital Syphilis

Reported cases of congenital syphilis remained stable from 1996 to 1997. St. Louis County reported six (50%) of the reported congenital syphilis cases, followed by St. Louis City with four (33.3%). Both Outstate Missouri and Kansas City reported one case each (8.3% of the state's total). African Americans continue to be disproportionately represented among congenital syphilis cases, comprising nine (75.0%) of the 12 cases reported in 1997.

Routine screening of pregnant women in prenatal care continues to contribute significantly to the decline in congenital syphilis cases. Access to prenatal care and/or the willingness of pregnant women to seek prenatal care are significant factors in the prevention of congenital syphilis cases. Pregnant females and newborns with positive serologies are high priority for field investigation by public health personnel. Intensive patient evaluation is provided to assure appropriate diagnosis and treatment including behavioral risk assessment, and emphasis on the importance of prenatal care and repeat syphilis serologic testing.

Of the 12 congenital syphilis cases reported in 1997, seven (58.3%) were born to mothers who had received no prenatal care. The issue of prenatal care

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has been addressed with the St. Louis Regional Prevention Planning Group.

Early Syphilis: Primary and Secondary (P&S) and Early Latent

Missouri experienced an increase in case rates of early syphilis from 1987–93. Since that time, public health activities have been targeted toward the reduction of syphilis (85.1% decrease in early syphilis from 1993 to present). During 1997, 320 early syphilis cases were reported in Missouri residents. This represents a 33.3 percent decrease from the 480 cases reported in 1996. Of the 320 cases of early syphilis, 36.9 percent (118 cases) were in the primary and secondary stage, and 63.1 percent (202 cases) were in the early latent stage. These figures represent a 46.6 percent decline in P&S syphilis cases, and a 22.0 percent decline in early latent syphilis cases, from the 221 P&S cases and the 259 early latent cases reported in 1996. Several interventions influenced the marked decreases in early syphilis cases, including enhanced public awareness through extensive media coverage and advocacy of symptom recognition by community-based organizations, neighborhood health centers and peer-based outreach workers within targeted communities. Of additional significance was the incorporation of STD awareness and education into the regional HIV Community Planning process as well as expanding the involvement of public health counseling and intervention specialists in community planning. The St. Louis STD Task Force collaborated with the St. Louis STD/HIV Prevention Training Center at Washington University to provide physician/clinical training and education.

Syphilis rates across the state appear to be related to risk factors which include illicit drug use (especially crack cocaine use), availability of and access to health care, and socio-economic status. Target populations for syphilis intervention are African Americans, persons 15–34 years of age, drug users and their sex partners, and St. Louis residents. In 1997, the rate of syphilis in St. Louis City and County was 6.7, compared to the Missouri rate of 2.3.

Notable declines in the number of early syphilis cases were seen in all areas of the state except Outstate Missouri. St. Louis City had a 47.1 percent decrease from the 278 cases reported in 1996, St. Louis County had a 41.5 percent decrease from the 123 cases reported in 1996, and Kansas City had a 60.0 percent decrease from the 20 cases reported in 1996. See Table 1. Figure 3 shows the geographic distribution of early syphilis cases in 1997.

The only area that reported increases in early syphilis in 1997 was Outstate Missouri. In 1997, 93 cases of early syphilis were reported, representing a 57.6 percent increase from the 59 cases reported in 1996. Early latent syphilis cases in Outstate Missouri increased by 75.0 percent (from 40 to 70 cases), and P&S syphilis cases increased by 21.1 percent (from 19 to 23 cases). The Bootheel region[¶] of southeastern Missouri has been experiencing an outbreak of syphilis. During 1997, 12 cases of P&S syphilis and 33 cases of early latent syphilis were reported from this region. The Department of Health and local health officials have developed a three-part plan to address the outbreak and prevent the reoccurrence of disease. The components of the plan are described in the sidebar.

Although significant declines in early syphilis morbidity have occurred both nationally and in Missouri, the rates of early syphilis in Missouri remain unacceptably high. African Americans

Syphilis Outbreak Control Strategy for Southeast Missouri

- **Immediate Outbreak Response**
  includes investigation of syphilis cases and contacts, examination and presumptive treatment of contacts, syphilis screening in high-risk populations and education of at-risk groups and the general public
- **Meetings Between Local Health Departments and Clinical Partners**
  to improve diagnosis, treatment, reporting, follow-up and prevention of syphilis and other STDs
- **Meetings Between Public Health Officials and Community Members**
  to identify and help implement mechanisms to improve the health of the community

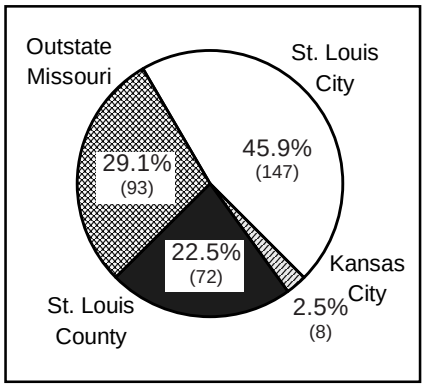

Figure 3. Reported early syphilis cases by geographic area, Missouri, 1997.

[¶]Butler, Dunklin, Mississippi, New Madrid, Pemiscot, Scott, and Stoddard Counties

continue to be disproportionately represented among 1997 P&S syphilis cases, accounting for 86.4 percent (102 cases) in contrast to whites who account for 11.9 percent (14 cases). Corresponding rates are 18.7 and 0.3, respectively.

Missouri is currently involved in a five-year study to evaluate the rise and decline of syphilis in the St. Louis area in the early 1990s, and the connection between syphilis and HIV. Dr. Bradley Stoner of Washington University is investigating the extent to which specific behavioral, social, and demographic factors contributed to syphilis and HIV acquisition during the epidemic period, and the extent to which syphilis served as a co-factor in HIV transmission. Missouri hopes to use the findings from this retrospective study to develop strategies to achieve P&S elimination and congenital syphilis eradication.

HIV Disease

Through the end of 1997, a cumulative total of 11,134 cases of HIV disease[§] have been reported in Missouri residents; 4,304 (38.7%) of these individuals are known to have died. During 1997, 950 cases of HIV disease were reported. The term HIV disease refers to the sum of all HIV and AIDS cases. HIV cases are those individuals infected with HIV who have not progressed to AIDS. If and when individuals develop a specific HIV-related illness or depressed immunologic status that causes them to meet the case definition for AIDS, they are no longer classified as an HIV case, but instead as an AIDS case.[§§] HIV cases, in general, represent individuals more recently infected with HIV compared to those with AIDS.

Precipitous Declines in AIDS Cases

Of considerable interest and remarkable achievement in 1997 was the precipitous decline in reported AIDS cases. The 480 cases reported in 1997 reflect a 41.2 percent decrease from the 816 cases reported in 1996. See Figure 4. Missouri's AIDS rates declined from 15.9 in 1996 to 9.4 in 1997. The 9.4 case rate in 1997 was lower than the national rate of 22.3.

Missouri AIDS trends parallel national trends. During 1996, 68,808 cases of AIDS were reported in the United States. During 1997, 60,634 cases of AIDS were reported, a 11.9 percent decrease. Certainly two of the contributing factors to the precipitous decline in reported AIDS cases are better combination antiretroviral therapy for HIV disease and the better use of prophylactic antibiotics to prevent HIV-related opportunistic infections.

Another contributing factor to the decrease of AIDS cases may be a possible decline in the number of new HIV infections in Missouri in recent years. There is significant concern that the effective use of better treatment regimens resulting in declining AIDS incidence and deaths may contribute to a resurgence of individuals engaging in high risk behaviors for HIV infection. In 1998, the Department of Health is collaborating with the St. Louis University School of Public Health to replicate the High Risk Testing Survey (HITS) originally conducted from November 1995 to December 1996. Missouri is conducting this study (named HITS II) along with six other states. In HITS II, Missouri will interview approximately 350 individuals from high risk venues (STD clinics, gay bars, and IDU outreach settings) to assess participants' attitudes regarding HIV prevention strategies (including testing). Results from the survey will help target appropriate prevention messages/ interventions to high risk groups.

(continued on page 26)

[§] Throughout this report, all statistics related to HIV disease exclude the cumulative 99 HIV cases and 249 AIDS cases reported in persons residing in federal correctional facilities in Missouri.

[§§] The CDC case definition for AIDS includes persons with a CD4+ lymphocyte count less than 200 cells per microliter and/or the diagnosis of at least one of approximately 30 specific opportunistic infections/malignancies.

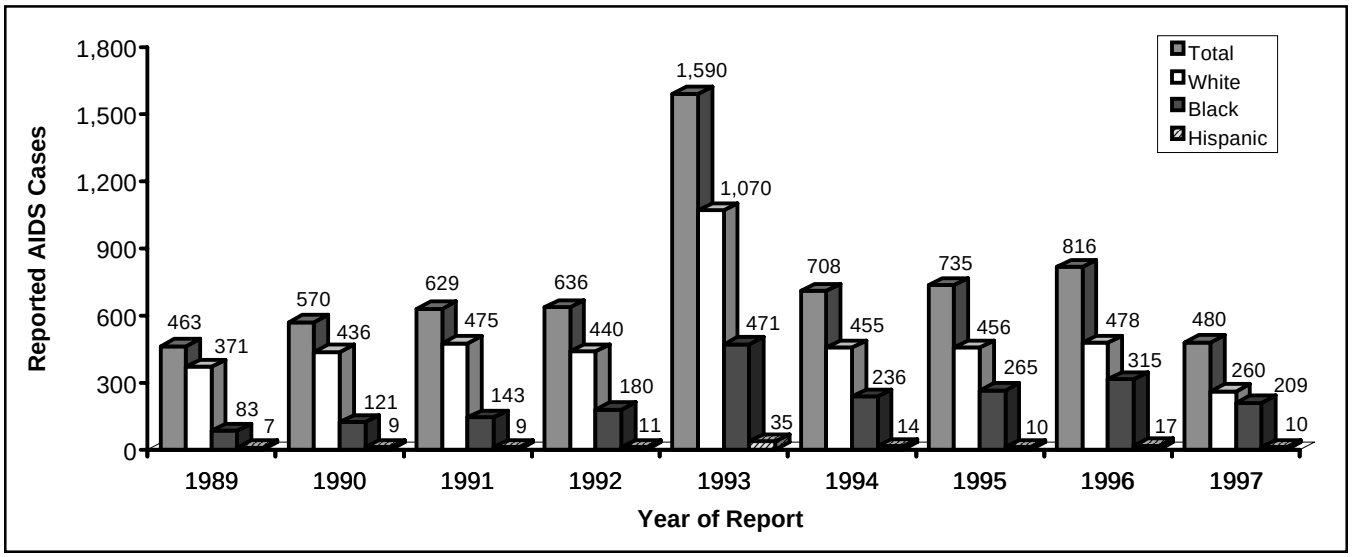

Figure 4. Reported AIDS cases by race/ethnicity and year of report, Missouri, 1989–97.

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AIDS-related deaths in Missouri have also sharply declined and parallel a national trend. The 163 AIDS-related deaths reported through death certificates in 1997[†] reflect a 51.9 percent decrease from the 339 deaths reported in 1996. During the first half of 1996, 21,460 persons died of AIDS nationwide. During the first half of 1997, 12,040 persons died of AIDS, a 43.9 percent decrease. As with the decline in AIDS cases, better treatment regimens for HIV disease and better use of prophylactic antibiotics to prevent HIV-related opportunistic infections appear to be the major contributing factors to the decline in AIDS-related deaths.

Until recent years, the number of AIDS cases provided a fairly accurate picture of the epidemic of HIV disease. The typical clinical course of an individual diagnosed with HIV infection was approximately 10–12 years. However, with treatment advances, persons with HIV infection are living longer and not progressing to AIDS as rapidly. Therefore, AIDS cases are no longer accurately characterizing the epidemic, and thus are not as useful as HIV cases in characterizing more recently infected individuals. For this reason, CDC will soon release guidelines recommending that all states adopt an HIV surveillance system. Currently, Missouri is one of only 29 states with HIV reporting (all cases of HIV infection have been reportable by name in Missouri since 1987). Missouri works closely with community planning and other prevention partners to continually incorporate HIV data into prevention planning processes.

It is estimated that there are 8,000–11,000 persons with HIV infection currently living in Missouri. These estimates suggest that, at a maximum, only about 38 percent of those living with HIV have not been diagnosed and reported. This estimate is generally consistent with CDC estimates that approximately two-thirds of persons living with HIV infection have already been confidentially tested for HIV and know their status. However, significant challenges exist to characterize the risk factors for the remainder of individuals who are infected, yet have not been tested for HIV infection and reported to public health officials.

Significant Declines in AIDS-Related Opportunistic Infections

Directly proportional to significant declines in AIDS cases and deaths is the precipitous decline in reported AIDS-related opportunistic infections (OIs). In September 1997, CDC described a six percent national decline in the number of reported OIs.[††] Most notable were declines among whites, and specifically men who have sex with men. In addition, in March 1998, the *New England Journal of Medicine*[†††] reported results of a study involving 1,255 AIDS patients. Mortality among patients declined from 29.4 per 100 person-years to 8.8 per 100 person-years in the second quarter of 1997.

HIV Disease by Gender

The substantial majority of HIV disease cases continue to be reported in males. Of the 7,434 cumulative cases of AIDS reported through 1997, 6,832 (91.9%) were males. However, females have slowly but progressively been making up a larger proportion of annually reported cases, and in 1997 comprised 13.1 percent of AIDS cases reported as compared to 12.0 percent in 1996. Females also make up a larger percentage of more recently infected individuals, comprising 21.5 percent of reported HIV cases in 1997 as compared to 20.0 percent in 1996. Based on these trends, the Department of Health has increased intervention efforts among women of childbearing age at high risk for HIV infection. These interventions include outreach HIV oral testing and health education in the three regions of highest HIV disease morbidity among women: St. Louis metropolitan area, Kansas City and Columbia.

HIV Disease by Race and Ethnicity

Whites continue to make up a majority of reported cases of HIV disease (68.6 percent of cumulative cases of AIDS and 53.6 percent of cumulative HIV cases, with white males contributing 64.8 percent of all AIDS cases and 47.1 percent of all HIV cases). However, African Americans and Latinos continue to be disproportionately represented in the epidemic. The rate for HIV disease is much higher in African Americans and Latinos. For AIDS cases reported in 1997, the rate in whites was 5.8 per 100,000; in African Americans 38.3, and in Latinos 16.2. These trends are parallel to 1997 HIV case rates (5.6, 37.8, and 16.2, respectively). Through 1997, a total of 7,082 HIV disease cases had been reported in whites. Corresponding numbers in African Americans and in Latinos were 3,741 cases and 219 cases, respectively.

In recent years through 1996, the rate of increase in annually reported AIDS cases has been noticeably higher for African Americans as compared to whites. Statewide declines in reported AIDS cases from 1996 to 1997 were not as great among African Americans as among whites. Specifically, from 1996 to 1997, the number of reported cases among whites decreased by 45.6 percent (from 478 to 260 cases), whereas among African Americans reported cases decreased 33.7 percent (from 315 to 209 cases). See Figure 4.

HIV Disease by Age Group

Among cumulative AIDS cases reported through the end of 1997, the largest percentage (45.9%) were diagnosed in persons between the ages of 30–39; the

[†] Provisional data

[††] CDC. Update: trends in AIDS incidence, deaths and prevalence—United States, 1996. MMWR 1997; 46:165–73.

[†††] Palella FJ, Delaney KM, Moorman AC, et al. Declining morbidity and mortality among patients with advanced human immunodeficiency virus infection. N Engl J Med 1998;338:853–60.

second largest percentage (23.5%) were diagnosed in persons between the ages of 20–29. Among cumulative HIV cases, the largest percentage were diagnosed between the ages of 20–29 (40.7%); the second largest percentage were diagnosed between the ages of 30–39 (37.5%).

Of AIDS cases reported in 1997, the greatest percentage (46.3%) were diagnosed in persons in the 30–39 year age group. Of total HIV cases reported in 1997, the greatest percentage (35.5%) were in the 20–29 year age group.

Taken together, these data indicate that many HIV infections are occurring in persons in their twenties, and that infections are also occurring in teenagers.

HIV Disease by Geographic Area

Missouri is divided into seven community planning regions. Members of the regional community planning groups work closely with statewide and metropolitan area surveillance staff in planning prevention and intervention activities.

The community planning regions are outlined in Figure 5, which also shows the number of cumulative AIDS cases by county. Of the 7,434 cumulative AIDS cases reported, 3,304 (44.4%) were from the three-county St. Louis Planning Region, and 2,580 (34.7%) were from the Kansas City Planning Region. These two planning regions also had the highest rates of both HIV and AIDS cases in 1997. For that year, the HIV case rates for the St. Louis and Kansas City planning regions were 14.0 and 12.1, respectively. Corresponding AIDS rates were 14.1 and 14.0, respectively. Both planning regions experienced declines in reported AIDS cases from 1996 to 1997. Specifically, the numbers of AIDS cases reported from the St. Louis and the Kansas City planning regions decreased by 47.1 percent and 34.1 percent, respectively. The number of reported cases from the outstate planning regions declined by 38.4 percent from 1996 to 1997. Figure 6 shows cumulative HIV cases by county.

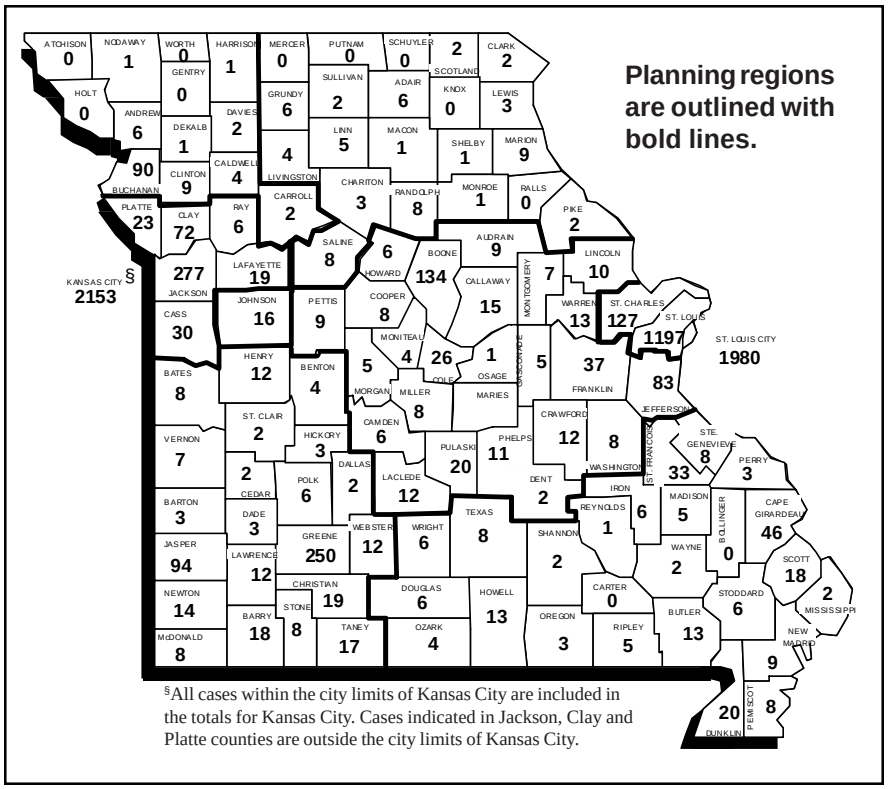

Figure 5. Reported AIDS cases not living in correctional facilities at time of diagnosis by county, Missouri, cumulative through 1997.

HIV Disease by Exposure Category

Men who have sex with men (MSM) continue to comprise the largest number of reported HIV disease cases. In 1997, 65.4 percent of reported cases of AIDS and 44.3 percent of reported HIV cases were in MSM. Among persons more recently infected with HIV, a smaller proportion seem to have acquired their infection through male homosexual/bisexual contact. See Table 2. Statewide, cases of AIDS among MSM declined by 40.4 percent, from 527 cases in 1996 to 314 cases in 1997. African American men have been making up a larger proportion of annually reported AIDS cases among MSM—31.0 percent of 1996 cases and 36.3 percent of 1997 cases.

Men who have sex with men and inject drugs (MSM/IDU) comprised 4.0 percent of AIDS cases and 3.0 percent of HIV cases, reported in 1997. No clear upward or downward trends in AIDS among MSM/IDU were evident in the years preceding 1997. From 1996 to 1997, the number of reported cases in MSM/IDU decreased by 72.5 percent (69 to 19 cases). The percent decreases among whites and African Americans were 63 percent and 77 percent, respectively.

Injecting drug users (IDUs) comprised 8.5 percent of AIDS cases and 10.9 percent of HIV cases reported in 1997. The annual numbers of AIDS cases among IDUs generally continued to increase until 1997. The 41 cases reported in 1997 represented a 46.1 percent decrease from the 76 cases reported in 1996. Declines were somewhat evenly distributed among whites and African Americans (41 percent and 49 percent, respectively). As a component of the High Risk Survey (HITS) II, Missouri will oversample

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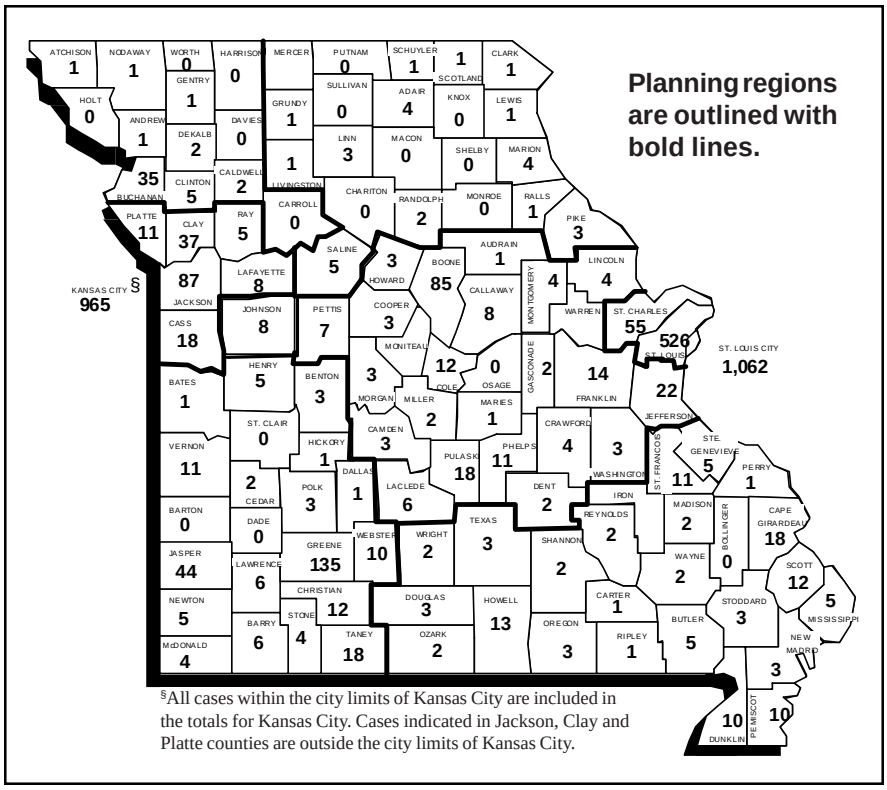

§All cases within the city limits of Kansas City are included in the totals for Kansas City. Cases indicated in Jackson, Clay and Platte counties are outside the city limits of Kansas City.

Figure 6. Reported HIV cases not living in correctional facilities at time of diagnosis by county, Missouri, cumulative through 1997.

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IDUs to determine current HIV testing patterns, barriers to testing, and prevention strategies among this high risk population.

Heterosexual contacts comprised 11.7 percent of AIDS cases and 11.7 percent of HIV cases reported in 1997. The annual number of reported cases of AIDS in heterosexual contacts has, in general, increased until 1997. The 56 cases reported in 1997 reflect a 39.1 percent decrease from the 92 cases reported in 1996. Declines were seen in both whites and African Americans (58 percent and 23 percent, respectively). For the past four years, African Americans have made up a larger percentage of annually reported heterosexual AIDS cases than whites. For cases reported in 1997, 76.8% were in African Americans. African Americans also appear to be comprising a larger proportion of more recently infected persons who acquired their HIV infection through heterosexual contact.

Perinatal HIV Infection and Ryan White Care Act Requirements

Through 1997, a total of 41 perinatal (mother to infant) AIDS cases and 34 perinatal HIV cases have been reported, including two perinatal AIDS cases and two HIV cases reported in 1997. The Ryan White Care Act of 1996 requires that all states provide recommendations for HIV counseling and voluntary testing of pregnant women, determine rates of perinatal transmission, and determine factors causing transmission (e.g., inadequate prenatal care, unavailable therapy, therapy failures). The Ryan White Care Act also mandates that all states demonstrate a 50 percent reduction in the rate of new perinatal AIDS or HIV cases as compared to the 1993 rate, or demonstrate that at least 95 percent of women who have had at least two prenatal care visits prior to 34 weeks of gestation have been tested for HIV. Through implementation of the CDC Surveillance to Evaluate Prevention (STEP) Project, Missouri has been able

Table 2. Reported HIV and AIDS Cases by Exposure Category, Missouri, 1982–1997

	HIV Cases*				AIDS Cases**				HIV/AIDS Cases	
	Reported 1997		Cumulative		Reported 1997		Cumulative		Cumulative	
Exposure Category* **										
MSM	208	(44.3%)	2,165	(58.5%)	314	(65.4%)	5,358	(72.1%)	7,523	(67.6%)
MSM/IDU	14	(3.0%)	238	(6.4%)	19	(4.0%)	669	(9.0%)	907	(8.1%)
IDU	51	(10.9%)	366	(9.9%)	41	(8.5%)	509	(6.8%)	875	(7.9%)
Heterosexual Contact	55	(11.7%)	463	(12.5%)	56	(11.7%)	495	(6.7%)	958	(8.6%)
Adult Hemophiliac	1	(0.2%)	24	(0.6%)	5	(1.0%)	143	(1.9%)	167	(1.5%)
Adult Transfusion	2	(0.4%)	16	(0.4%)	2	(0.4%)	93	(1.3%)	109	(1.0%)
Other/Unknown Adult	137	(29.1%)	387	(10.5%)	41	(8.5%)	107	(1.4%)	494	(4.4%)
Perinatal Transmission	2	(0.4%)	34	(0.9%)	2	(0.4%)	41	(0.6%)	75	(0.7%)
Other/Unknown Pediatric	0	(0.0%)	7	(0.2%)	0	(0.0%)	19	(0.3%)	26	(0.2%)
Missouri Total	**470**	**(100.0%)**	**3,700**	**(100.0%)**	**480**	**(100.0%)**	**7,434**	**(100.0%)**	**11,134**	**(100.0%)**

*HIV Cases-Persons with HIV infection who have not developed one of the specific diseases or conditions which would cause them to meet the case definition for AIDS.
**AIDS Cases-Persons with HIV infection who have developed one or more of the specific diseases or conditions which cause them to meet the AIDS case definition.
***MSM=men who have sex with men; MSM/IDU=men who have sex with men and inject drugs; IDU=injecting drug users

to document significant reductions in rates of new perinatal HIV and AIDS cases. Provisional data indicate that a major contributing factor to the reduction of cases is the use of zidovudine, which has been shown to significantly reduce the risk of mother-to-infant transmission of HIV.

Basic HIV Prevention/Treatment Information

Significant progress has been made in recent years in the treatment of patients with HIV disease, and the term "highly active antiretroviral therapy" (HAART) has come into use. Treatment with combinations of antiretroviral drugs is now being used to decrease the amount of virus in the blood and slow the progression of the disease.

Early medical treatment may help an HIV-infected person live a longer, healthier life. Persons at risk for HIV infection should be tested. If infection is detected, the individual should immediately access medical care so that he or she can receive optimal benefit from increasingly effective treatment options.

It is important to remember that the currently recommended drug combinations are not easy to take because of the large numbers of pills that must be taken at multiple specified times during the day and night, and because of side effects associated with the medications. In addition, the development of resistance to the drugs continues to be a major concern. Also, while the drugs provide significant benefit for many HIV-infected persons, they are not effective in all infected individuals.

There is no cure for HIV infection. Consequently, the prevention of new HIV infections continues to be of utmost importance. Since no vaccine for HIV is available, the only way to prevent infection is to avoid behaviors that put one at risk.

Sexual Behaviors:

☛ The surest way to protect oneself against HIV infection is not to have sex at all, or to have sex with only

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Disease Reporting

During working hours:
Cases of reportable diseases and conditions should be reported promptly to your local health department, or to the Missouri Department of Health at
(800) 392-0272.

Disease Emergencies:
When the reportable disease represents an emergency requiring immediate public health action, you can reach the Department of Health duty officer after hours, weekends or holidays at
(573) 751-4674.

STD/HIV Treatment/Prevention Guidelines

CDC. 1998 Guidelines for treatment of sexually transmitted diseases. MMWR 1998;47(No. RR-1).

CDC. Report of the NIH panel to define principles of therapy of HIV infection and Guidelines for the use of antiretroviral agents in HIV-infected adults and adolescents. MMWR 1998;47(No. RR-5).

CDC. Guidelines for the use of antiretroviral agents in pediatric HIV infection. MMWR 1998;47(No. RR-4).

CDC. Public Health Service task force recommendations for the use of antiretroviral drugs in pregnant women infected with HIV-1 for maternal health and for reducing perinatal HIV-1 transmission in the United States. MMWR 1998;47(No. RR-2).

CDC. 1997 USPHS/IDSA guidelines for the prevention of opportunistic infections in persons infected with human immunodeficiency virus. MMWR 1997;46(No. RR-12).

CDC. Public Health Service guidelines for the management of health-care worker exposures to HIV and recommendations for postexposure proplylaxis. MMWR 1998;47:(No. RR-7).

All of the above can be found at:
http://www.cdc.gov/epo/mmwr/mmwr_rr.html

Missouri Department of Health Policy to Reduce the Risk of Perinatal HIV Transmission in Missouri. Missouri Epidemiologist 1996; 18(2):1-4.
(Note that the Public Health Service guidelines on the use of zidovudine to reduce perinatal HIV transmission, and on prevention of opportunistic infections, which are listed in the References section of this article, have been updated and are listed above.)
http://www.health.state.mo.us/cgi-bin/uncgi/MoEpi

CDC. U.S. Public Health Service recommendations for human immunodeficiency virus counseling and voluntary testing for pregnant women. MMWR 1995;44(No. RR-7).
http://www.cdc.gov/epo/mmwr/preview/ind95_rr.html

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one steady, uninfected partner who is not having sex with any other person. It is best to wait to have sex until both partners are committed to a relationship.

☛ If an individual is not in such a relationship, and engages in sex, he or she should use a latex condom correctly during each episode of sexual intercourse. In addition, if one does choose to have sex with more than one partner, it is strongly recommended that the total number of partners be limited to as small a number as possible.

Drug Use Behaviors:

☛ It is highly recommended that individuals not use illicit drugs. Those using such drugs should seek drug abuse treatment to help them stop.

☛ If a person cannot stop injecting drugs, he or she should never share needles and syringes with anyone or re-use equipment used by someone else. For individuals who continue to inject drugs, the once-only use of sterile needles and syringes remains the safest, most effective approach for limiting HIV transmission.

☛ If one chooses to share or re-use injection equipment, thoroughly clean and disinfect it (using full-strength liquid household bleach) between uses. However, it must be remembered that cleaning injection equipment with cleaners, such as bleach, does not guarantee that HIV is killed.

Persons whose behavior puts them at risk for HIV infection should be tested by their medical provider or at a public health clinic. Counseling before and after testing (i.e., pretest and posttest counseling) is an integral part of the testing procedure (and is required by Missouri law).

The following are specific recommendations for counseling HIV-infected patients:

- Persons who test positive for HIV antibody should be counseled appropriately about the behavioral, psychosocial and medical implications of HIV infection.
- Appropriate social support and psychological resources should be made available to assist HIV infected persons in coping with emotional distress.
- Persons who continue to be at risk for transmitting HIV should receive assistance in changing or avoiding behaviors that can transmit infection to others.

All pregnant women should routinely receive HIV education and counseling as part of their prenatal care, and each pregnant woman should be encouraged by her medical provider to undergo voluntary HIV testing. If a pregnant woman is infected with HIV, she should be offered treatment for her infection and to reduce the risk of transmission of the virus to her infant (if she is not already receiving such treatment). HIV-infected women should not breast-feed their infants.

HIV-infected persons must not donate blood, plasma, body organs, other tissue or sperm.

HIV-infected persons are required by Missouri law to inform their personal health care providers (physicians, dentists, and other health professionals) of their infection status prior to receiving any care.

HIV-infected persons are encouraged to make use of service coordination services provided by certain local public health agencies and community-based organizations. These services are available to all Missouri residents diagnosed with HIV, regardless of income or insurance coverage, and assist individuals in linking to care services, community resources, and information. For information on these services contact the Bureau of HIV/AIDS Care and Prevention Services at (800) 359-6259.

Caring for Women: Management and Prevention of Cervicitis and Pelvic Inflammatory Disease

October 7, 1998
11:30 a.m.–2:00 p.m. CDT

Mucopurulent cervicitis (MPC) is frequently encountered in diverse clinical settings and may be predictive of the presence of STD pathogens which can cause upper genital tract infections. Acute pelvic inflammatory disease (PID) occurs in about one million women annually in the United States with costs exceeding $4.2 billion. Following a single episode of PID, approximately 25% of women will develop sequelae which include ectopic pregnancy, infertility and chronic pelvic pain.

Physicians, nurse practitioners, nurse midwives, physician assistants and registered nurses who provide care for women face many challenges when managing these clinical syndromes. This program will address these issues and more.

If you are interested in downlinking this satellite program, please contact the St. Louis STD/HIV Prevention Training Center at (314) 747-0294. You may also register at a prearranged site. For a list of prearranged participating sites contact Donna at (314) 747-1522.

Bureau of Environmental Epidemiology 1997 Annual Report

Brian M . Quinn
Bureau of Environmental Epidemiology

The Bureau of Environmental Epidemiology (BEE) has been one of the Missouri Department of Health's most diverse units. From risk and health assessment to epidemiological studies, from occupational fatality investigation to childhood lead poisoning prevention, BEE has served Missourians through a wide variety of environmental health programs.

By the end of 1997, ideas for possible changes for the Bureau were being discussed for the coming year. It was becoming more evident that the Department of Health needed a comprehensive environmental public health unit that could handle a wider variety of public health problems and issues. The idea was born to combine BEE with the Bureau of Community Environmental Health (BCEH) and create one unit that would have the staff, expertise, and resources to deal with issues such as restaurant and food production sanitation, on-site sewage, commercial lodging and milk production certification (to name just a few programs from BCEH) as well as BEE's areas of risk and health assessments, lead poisoning prevention and others. By the end of 1997, the combination of the two bureaus had moved from a possibility to a probability; the merger formally began in early 1998.

The following reports reflect program and project activity under the original BEE organization. This will be the last annual report for BEE as it was in 1997. The 1998 annual report to be published in next year's May-June issue of the *Missouri Epidemiologist* will reflect the even more diverse activity of the new comprehensive environmental health unit now named the Section for Environmental Public Health.

BEE Risk Assessment Programs

BEE's two risk assessment programs are heavily involved in assessing the risks that hazardous substances in the environment pose to human health. These programs work closely with other state and federal environmental and health agencies, including the U.S. Environmental Protection Agency (EPA), the Missouri Department of Natural Resources (DNR), the federal Agency for Toxic Substances and Disease Registry (ATSDR), the Department of Defense (DOD) and the Department of Energy (DOE). These programs assess human risk through several different kinds of documents that discuss exposure levels, safe clean-up levels and various aspects related to exposure to substances found at hazardous waste sites statewide. An EPA-funded risk assessment involves a quantitative analysis or review of information about a hazardous waste site. This kind of assessment provides a mathematical "best guess" of what will happen if the site is not cleaned up or if the site is only cleaned up to a specific level of contamination, rather than a safe (walk away) level. A state-funded risk assessment provides more generic clean-up guidelines for sites, based on similar but not identical assumptions/ formulae in contrast to EPA numbers. The information given in the following two subsections reflect extensive research, cooperation, coordination, document review and interagency communication by BEE staff. For example, an expedited risk assessment may take a month to complete, while the average, less complicated risk assessment may take as long as two months to complete and submit to EPA.

Risk Assessment Program (EPA)

The following activities were completed during 1997:

- Completed eight site-specific human health risk assessments.
- Reviewed eight site-specific ecological risk assessments.
- Developed safe residual soil levels/ remediation goals for 11 sites.
- Reviewed 12 risk assessments (from other agencies).
- Reviewed nine site documents for health-related issues.
- Attended eight training courses/ conferences.
- Attended and/or gave presentations at four public meetings.
- Attended 15 technical site meetings.
- Conducted three site visits/investigations.
- Worked on seven projects with assessors from other agencies and/or responsible parties.
- Maintained effective communication and working relationships with numerous local, state and federal agencies and organizations.

For more information, contact the program at (800) 392-7245.

Risk Assessment Program (State)

The following activities were completed during 1997:

- Reassessed 53 abandoned or uncontrolled hazardous waste sites for their risk to public health.
- Analyzed 21 sites to determine if private drinking water wells were impacted by nearby contamination.
- Continued assisting DNR by reassessing the health risks at five DOD sites. One is an active Air Force base; the other sites are inactive, but are being cleaned up for future use.
- Provided health information to DNR to assist with its Voluntary Cleanup Program. Forty of these sites are already cleaned up, while 120 more properties are in the process of cleanup.
- Completed six clean-up assessments on sites other than abandoned or

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uncontrolled hazardous waste sites.

- Assisted DNR in developing a guidance document for their Brownfield Redevelopment Program.
- Provided consultative services to DNR's Air Pollution Control Program regarding acceptable ambient air levels at 25 sites.

For more information, contact the program at (800) 392-7245.

Public Health Assessment Program (ATSDR)

The Public Health Assessment Program is part of a state cooperative agreement with ATSDR to conduct health assessments in Missouri communities near hazardous waste sites. In contrast to EPA and state risk assessments, public health assessments provide a qualitative evaluation of exposures to contaminants at a site and related adverse health effects that could have occurred in the past, are presently occurring, or could occur in the future. These health effects are evaluated by estimating exposures based on interviews with citizens, community and elected leaders, etc., or based on review of documents such as risk assessments, site histories and any other available information about a site. Findings from these assessments are reported through different types of documents including public health assessments, site reviews and updates, health consultations and site summaries. These documents are designed to address community concerns, as well as to inform and educate the communities about sites, and help them make decisions about how to protect themselves from exposure to site-related contaminants and resulting adverse health effects. These documents also are used by environmental agencies with regulatory power (e.g., EPA) to help make the most health protective decisions when planning clean-up or remediation actions at a site.

All of these program activities represent a tremendous amount of communication, coordination and cooperation with numerous local, state and federal departments and agencies required to complete the work summarized in this report. This program has also been heavily involved in numerous other sites and issues which are currently in the early stages of community and governmental activity and development**.** In 1997, the Public Health Assessment program:

- Completed 15 health consultations.
- Hosted or attended five public availability sessions.
- Visited 11 hazardous waste sites statewide.
- Coordinated or participated in two community surveys.
- Participated in five Community Assistance Group meetings.
- Participated in numerous health education group meetings.
- Provided technical assistance to other agencies.

For more information, contact the program at (800) 392-7245.

Missouri Occupational Fatality Assessment and Control Evaluation (MO FACE) Program

This program operates through a cooperative agreement with the National Institute for Occupational Safety and Health (NIOSH). It is responsible for conducting in-depth epidemiological investigations of work-related fatalities including deaths resulting from falls, electrocutions, machinery-related incidents, confined-space incidents and other causes. Occupational Fatality Reports produced from these investigations are shared with NIOSH, the employer involved, and safety groups statewide. The MO FACE program works closely with employers involved in workplace fatalities to help them take steps to prevent similar incidents from happening again. The program is also developing intervention initiatives, such as workshops and seminars, to help employers recognize workplace hazards so they can prevent fatalities before they occur. In addition to the above program activities, the MO FACE program conducted a special one year surveillance project on fire fighter and emergency responder injuries. The following is a synopsis of MO FACE program activities during 1997:

- Completed 15 occupational fatality investigations:
  - 2 machine-related incidents
  - 11 falls
  - 1 electrocution
  - 1 trench cave-in
- Reviewed notification of more than 300 possible workplace fatalities and determined 150 were traumatic work-related fatalities**.**
- Created, coordinated and conducted a fire fighter and emergency responder injury surveillance program.
- Identified 144 traumatic, lost work time injuries to fire fighters out of more than 400 incidents reported to this office. Six of these incidents were investigated by FACE Personnel.
- Maintained close working relationships with MO FACE surveillance system participants (114 county coroners, 114 sheriff's departments, 548 police departments, 804 fire departments and 221 ambulance services).
- Gave 19 presentations on both the MO FACE program and the Fire Fighters Injury Project.

For a copy of the 1997 MO FACE Annual Report, contact the program at (800) 392-7245.

Childhood Lead Poisoning Prevention Program

Childhood lead poisoning is one of the most common preventable environmental health problems in the world today. Its toxic health effects on young children's developing nervous, hematopoietic and renal systems range from acute (coma and seizures) to subtle (learning and behavioral problems or anemia). Children are at greater risk due to hand-to-mouth behaviors that allow ingestion of lead dust. Testing, treatment

and prevention of access to lead hazards are key elements to finding and, ultimately, eliminating childhood lead poisoning.

Today, the most frequent cause of lead poisoning in children is the dust and debris from deteriorating lead-based paint found primarily in older housing. While Missouri has its share of older homes containing lead-based paint, the state also features areas of contaminated soil near lead mines and smelters due to its unique role as the largest producer of lead and lead products in the United States.

During 1997, 39,402 Missouri children, less than 6 years of age, were reported as being screened for lead poisoning. The number of children found with blood lead elevations ≥10 mg/dl (the level at which a child is considered lead poisoned) decreased from 17.4 percent (7,663/43,958 screened) in 1996 to 13.7 percent (5,382/39,402 screened) in 1997.

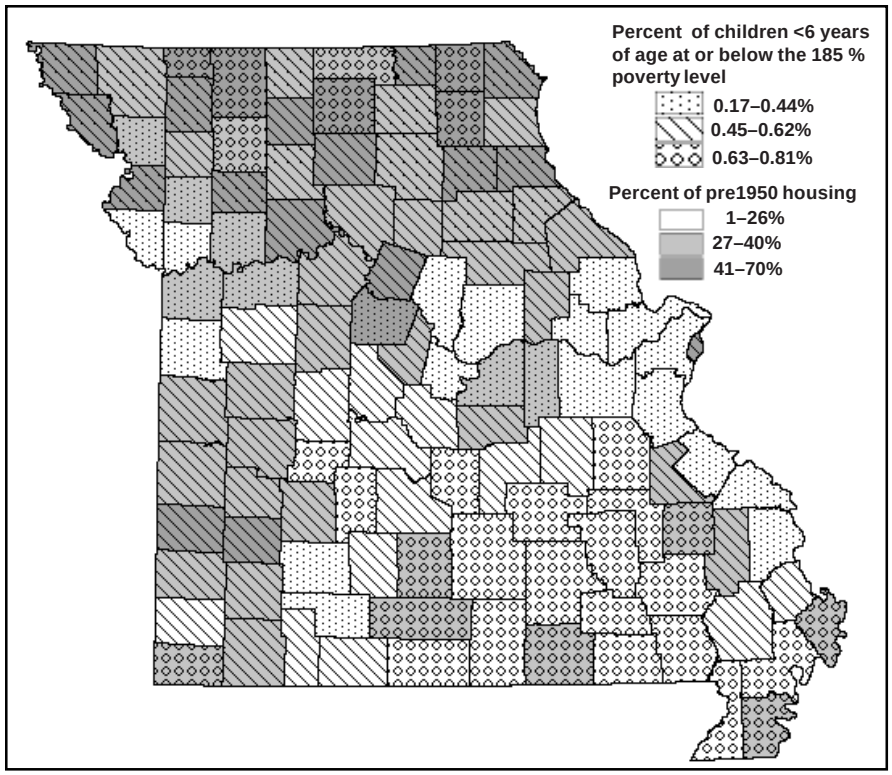

Figure 1. Percent of pre-1950 housing and percent of children <6 years of age at or below the 185 percent poverty level by county, Missouri, 1990.

In November 1997, CDC released new guidelines entitled "Screening Young Children for Lead Poisoning: Guidance for State and Local Public Heath Officials." The document proposes the development of a statewide screening plan to target childhood blood lead screening efforts, based on analysis of certain risk factors, so that it is focused to benefit children who are most in need of these services. It suggests that in developing a statewide plan, state health officials should form an advisory committee which includes child health-care providers as well as representatives from local health departments, managed-care organizations, Medicaid, private insurance organizations and the community. The Department of Health began this process in January 1998 and the Childhood Lead Screening Advisory Committee continues to meet today to develop the Missouri Statewide Screening Plan.

Pertinent risk factors to be examined in the development of the statewide screening plan include the quantity of pre-1950 housing (due to a higher concentration of lead-based paint) and current screening data. Poverty indicators may also be incorporated into the data to assist in identifying areas where children are at increased potential for inhabiting older and deteriorating housing. In Missouri, other useful factors to include are whether parents are employed at lead mines or smelters and/or other lead occupations and hobbies.

According to the 1990 U.S. Census, 28.6 percent of the housing stock in Missouri was built prior to 1950. Figure 1 shows the percentage of pre-1950 housing by county in Missouri with an overlay of the percentage of children less than 6 years of age who are at or below 185 percent of the poverty level. Smaller geographic boundaries (such as zip codes, census tracts, etc.) identify areas with higher potential risk for lead poisoning. Unfortunately, in many areas of Missouri, inadequate numbers of children are screened, preventing the comparison of risk to reality.

A major function of the Missouri Childhood Lead Poisoning Prevention Program is to increase the number of reported blood lead screenings in order to determine the extent of lead poisoning and its location. Efforts necessary to accomplish this include educating Medicaid managed care plans and physicians regarding required blood lead screening during 12- and 24-month well-child visits, encouraging private laboratory reporting, and increasing general public awareness through various media sources. Future efforts will continue to be focused on areas identified to have the greatest potential risk to children based on housing, poverty, screening numbers and lead occupations.

Another primary role of the Missouri Childhood Lead Poisoning Prevention Program is to identify the source of lead hazard in the environment for a child

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with a confirmed elevated blood lead level, then to prevent or eliminate access to the hazard. Home environmental assessments are generally conducted by a public health nurse and sanitarian (trained in lead hazard assessment) who educate the family about specific personal hygiene, such as frequent and thorough handwashing of the child, washing toys, wet mopping to remove lead dust from floors and surfaces where small children play, and good nutrition through a diet high in iron and calcium to prevent bodily absorption of lead. During 1997, 2,552 environmental assessments were conducted to detect the source of the lead hazard for children reported with elevated blood lead levels.

Throughout the state, other lead program efforts include increasing community awareness and involvement in the efforts to eliminate and prevent childhood lead poisoning. Information concerning the level of risk for childhood lead poisoning for local needs assessments play an integral role in this process. For further information, please contact your local health department, or call the Childhood Lead Poisoning Prevention Program at (800) 575-9267.

Missouri Hazardous Substances Emergency Events Surveillance (HSEES) Program

The HSEES program is responsible for monitoring, collecting and interpreting information on emergency events involving the release of hazardous substances (spills, releases, accidents or threats of these). This information is analyzed to provide a clear picture of how such events affect the health and well-being of Missourians. The results are then used to help protect the public from injury and death caused by exposure to hazardous substance releases.

During 1997, a total of 2,272 potential environmental emergencies were reported to the HSEES program. Of these, 183 met the case definition of a hazardous substance release.

This program's complete annual report may be found on pages 14–16 of this issue. For more information, contact the program at (573) 526-4175.

Environmental and Occupational Diseases and Conditions Passive Surveillance System

The bureau maintains this passive surveillance system to document occupational diseases and health conditions which are required to be reported to the Department of Health by 19 CSR 20-20.020 and 19 CSR 20-20.080. Each year, the surveillance system receives reports on cases of environmental and occupational diseases and conditions that are entered into a database for evaluation and analysis. Cases of lead poisoning in children under 6 years of age are not included in the system because they are tracked by the state's childhood lead poisoning prevention program described earlier.

The majority of conditions reported within a given year typically are lead poisoning in adults and lead poisoning in 6 to 17-year-olds. However, final reports for lead poisoning in these two age groups were unavailable for this annual report. Also reported to the surveillance system are acute chemical poisoning (1 case in 1997) and carbon monoxide poisoning (34 cases in 1997).

For more information, contact the program at (800) 392-7245.

Radiological Health Program

BEE's Radiological Health Program is responsible for overseeing and regulating sources of ionizing radiation in non-medical settings. These sources are used in many ways, for example in nuclear pharmacies and industrial radiography. The program is also involved in emergency response and environmental radiation activities. Program staff conduct radon surveys statewide and provide radon information through seminars, displays and public awareness presentations. The Radon Hotline provides Missouri residents easy access to radon information. In 1997, the Radiological Health Program:

- Continued to register and reregister ionizing radiation sources used in non-medical settings:
  - 86 industrial radioactive material users
  - 113 x-ray users
- Performed periodic radiation safety surveys of industrial x-ray and radioactive material registrants.
- Participated in extensive training activities in preparation for emergency events at the Callaway and Cooper county nuclear plants. Training included drills, dress rehearsals and exercises. This year's Callaway exercise was federally evaluated and the bureau successfully demonstrated the capability to protect public health and safety in the event of a nuclear plant emergency event.
- Responded to four requests for assistance by scrap metal recyclers and landfill operators to locate and characterize radioactive sources.
- Participated for the eighth year in an EPA radon grant which provides funding for radon activities concentrated in counties that have a high potential for elevated radon levels. Activities included radon surveys in schools and working with county health departments to do radon testing in their counties.
- Continued to maintain and cultivate close working relationships with local, state and federal agencies and organizations including the Missouri Department of Natural Resources, Environmental Protection Agency, American Lung Association, Missouri Association of School Administrators and the Missouri Public Health Association. These relationships provided opportunities for information exchange, data gathering, coalition building, community outreach and funding.
- Presented 24 radon awareness programs at seminars, health fairs and other meetings.

- Provided radon detectors to 24 county and three city health departments for testing in their areas. These agencies distributed more than 1,200 detectors to the public.
- Received approximately 600 phone calls through the Radon Hotline.

For more information, contact the Radon Hotline at (800) 669-7236.

Special Studies

One of BEE's most important functions is to coordinate and conduct special epidemiological studies that are designed to determine whether and to what extent Missourians are exposed to hazardous substances in the environment. These studies require a tremendous amount of time, effort, coordination, planning, financial resources and personnel. A study can take up to two years or longer to complete from inception to the published final report. The following summarizes special study efforts in 1997:

The bureau continued a lead exposure study, funded by ATSDR, in children between the ages of 6 months to 6 years living in the area around the Big River Mine Tailings Site in St. Francois County. The study found that 17 percent of the participants in the study area had elevated blood lead levels, compared to three percent in the control area. Analysis of environmental samples and questionnaire data was completed in 1996. The final report was released to the public on May 27, 1997. If you have questions regarding this study or its availability, please call (800) 392-7245.

The bureau also continued a study to determine the exposure of area residents to emissions from the dioxin incinerator in Times Beach, Missouri. The first round of blood samples was collected in September 1995, before the incinerator began operation in March 1996. Blood samples were taken from 76 participants in the study area and 74 participants in a comparison area. The second sampling was performed in July 1996, approximately four months after the incinerator began operation. Second-round blood samples were taken from 75 of the original 76 participants in the study area and from 70 of the original 74 participants in the comparison area. The third and final sampling was conducted June 19–24, 1997.

Analysis of study results showed no increase in blood-dioxin levels between the first and second blood samples in the study population (persons living near the incinerator) or in the comparison population (persons living away from the incinerator). In fact, blood dioxin levels in both populations decreased between the first and second samples. The average tetrachlorodibenzo-p-dioxin (TCDD) concentration in study area participants was 1.81 parts per trillion (ppt) in the first sampling and 1.24 ppt in the second round. The average decrease for that group was .57 ppt. In comparison, the average TCDD in the participants from the comparison area for the first and second rounds were 1.43 and 1.38 ppt, respectively, an average decrease of .05 ppt.

Final results from all three sampling rounds will be summarized in a study report to be released to the public by early summer 1998.

State Public Health Laboratory Report

Newborn Screening — Hypothyroidism, Phenylketonuria, Galactosemia and Hemoglobinopathies

James Baumgartner, B.S., M.B.A., Chief, Metabolic Disease Unit

	Jan 98	Feb 98	Total YTD
Specimens Tested	8,511	7,648	16,159
Initial (percent)	75.3%	76.8%	12,277
Repeat (percent)	24.7%	23.2%	3,882
Specimens: Unsatisfactory	90	82	172
HT Borderline	827	743	1,570
HT Presumptive	20	13	33
PKU Borderline	1	0	1
PKU Presumptive Positive	1	1	2
GAL Borderline	4	1	5
GAL Presumptive Positive	1	0	1
FAS (Sickle cell trait)	92	81	173
FAC (Hb C trait)	22	27	49
FAE (Hb E trait)	1	2	3
FAX (Hb variant)	13	10	23
FS (Sickle cell disease)	5	4	9
FSC (Sickle C disease)	2	1	3
FC (Hb C disease)	0	0	0

HT = Hypothyroidism, PKU = Phenylketonuria, GAL = Galactosemia, Hb = Hemoglobin, YTD = Year to Date

Animal Rabies Surveillance - 1997

F. T. Satalowich, D.V.M., M.S.P.H.
Bureau of Veterinary Public Health

On the world scene, someone dies from rabies every ten minutes. Rabies is endemic in Missouri and activity continued at a low incidence level during 1997. This decline in rabies incidence started after the 1980 epidemic. Incidence declined through 1988 to a level of 36 cases. In 1989 the incidence rose to 62 cases. With that 72 percent increase, it was expected that the historic seven-year cycle of rabies epidemics was beginning. However, the number of cases dropped to 30 in 1990 and has averaged 30 cases a year for the past seven years. See Figure 1.

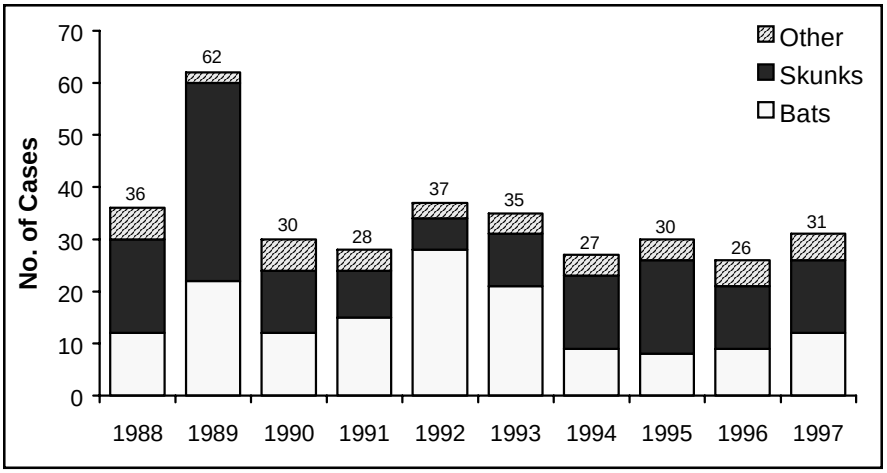

Figure 1. Confirmed animal rabies cases by year and species, Missouri, 1988–97.

The historic cycle does not appear to have continued. A number of reasons can be presented. The rabies reservoir skunk populations have been down in Illinois and Missouri. It is not known if the numbers have been significantly low enough to prevent a bite transmitted disease from reaching high levels, or if the Missouri skunks have developed some immunity to the North Central Strain of the rabies virus. It is also likely that the passive surveillance system, capturing such low numbers of cases, further influences the public's attention and interest thereby decreasing the number of animals submitted for evaluation.

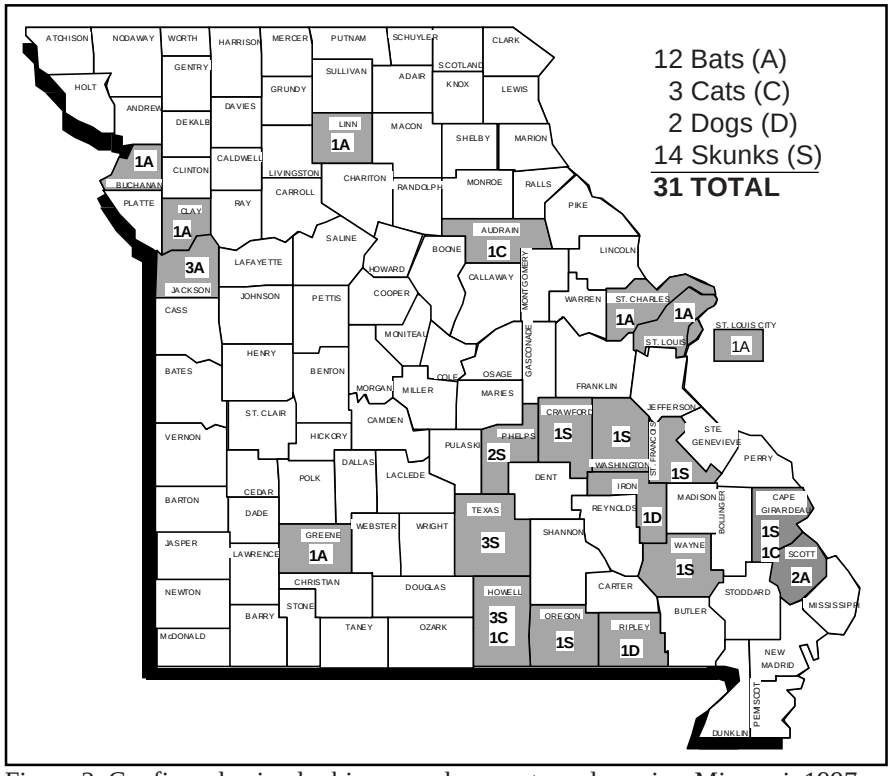

Figure 2. Confirmed animal rabies cases by county and species, Missouri, 1997.

Another positive approach to the decline in animal rabies could be the adherence to aggressive public health measures to prevent rabies. Rabies vaccines of three years duration of immunity have been in use for 15 years in domestic animals. This may have taken the stray animal population, previously vaccinated as pets, out of the equation of transmission of rabies both to wild and domestic animals. The stringent policy of euthanasia of unvaccinated dogs or cats exposed to laboratory-confirmed rabid animals may have prevented additional cases and outbreaks of rabies. Collectively, all of these factors probably contributed to the low level of rabies incidence. The test will come when the raccoon strain of rabies, now in Ohio and traveling at 30 miles per year, reaches our borders.

Missouri had 31 cases of animal rabies in 1997, including 14 skunks and 12 bats. Figure 2 shows confirmed rabies cases by county and species in 1997. Wild animal rabies spilled over into domestic animals to account for three cases of cat rabies and two cases of dog rabies.

Although monoclonal antibody strain identification was not accomplished in 1997, classification of the cases from those counties with activity in 1998, indicates that skunks in Missouri are being affected by the South Central Strain of rabies. Missouri is known to be

Cardinal Rules of Rabies Control

- All cats, dogs and ferrets should be vaccinated by a professional.
- A program of stray animal control should be instituted.
- Individuals should be instructed to stay away from wild and stray animals.
- **All** animal bites should be medically evaluated.

affected by both the North Central and South Central strains.

Historically, rabies has moved from the northeastern part of the state to the southwest in five to seven year cycles. This latest picture is different in that cases have been occurring along the Arkansas border for several years, moving northward at a slow rate. This past year showed that movement extend to Crawford, Washington and Phelps counties. All positive rabies cases being tested this year are being identified by Kansas State University. The confirmation of the movement of virus strains will be evaluated during the coming year.

Bat rabies averaged 15 cases per year for the past ten years, with only nine cases per year during the past four years. See Figure 1. In 1997, there were 273 bats tested with 12 confirmed positive, resulting in a four percent positive rate. The number and species of bats found positive in Missouri were seven Big Brown, three Red and two Hoary bats.

On the 1996 national picture (latest available data), animal rabies was down from the preceding year to a total of 7,128 cases. Wild animals accounted for 92 percent (6,550) of all rabies cases; raccoons accounted for 55 percent (3,595), skunks 25 percent (1,656), bats 11 percent (741) and foxes six percent (412). Other wild animals included: 43 ground hogs, 36 mongoose, 23 bobcats, 19 coyotes, five otters, three deer, two rabbits, two squirrels, two opossums, two fishers, two bisons, one elk, one shrew and one mink. Domestic animal rabies accounted for eight percent of the total, with cats accounting for 46 percent (266) of the cases, cattle 23 percent (131), dogs 19 percent (111) and horses eight percent (46). Other domestics included: 16 sheep/goats, three ferrets and one llama. Four human cases of rabies occurred nationwide in 1996.

Animal bites should be reported to your local health department or a medical authority, especially since Missouri is considered an endemic area. Evaluation of bites for possible post-exposure rabies treatment is a part of the four *Cardinal Rules* of rabies control. See sidebar.

While bite incidence rates are not available for Missouri, various national statistics are available and applicable to Missouri. There are 4.5 million dog bites annually in the United States. In 1996, 334,000 individuals (average age 15 years) were presented to emergency rooms (ER) because of dog bites. One percent of all ER visits are due to animal bites. The total annual cost of ER treatment of dog bites is estimated to be **$102.4 million.**

Communities are urged to enact an animal control ordinance. A model ordinance is available for your guidance from the Bureau of Veterinary Public Health at (573) 751-6136. Appropriate pet selection and responsible pet ownership are essential if animal bites are to be alleviated.

Each animal bite wound should be attended to in the following manner:

- Immediately wash wound with soap and water and/or viricidal agent.
- Irrigate the wound as necessary with buffered saline.
- Apply an antibacterial compound and provide anti-tetanus treatment, if required.
- Debride the wound as required.
- If rabies post exposure is going to be given, thoroughly infiltrate

(continued on page 38

Regimen for Rabies Post-Exposure Prophylaxis:

- Five doses of rabies vaccine administered IM in the upper deltoid in adults and/or the anterior thigh in young children or infants
- One dose administered on each of days 0, 3, 7, 14, and 28
- One time administration of HRIG

Regimen for Rabies Immune Globulin (HRIG):

- Administer on day 0, day patient presents or whenever rabies vaccine is indicated.
- Dosage: 20 IU/kg (0.133 ml/kg)
- Infiltrate as much HRIG as anatomically feasible locally into the wound(s).
- Remaining HRIG should then be administered IM in an active muscle, in the gluteal region or the anterior region of the thigh muscles

Regimen for Post-Exposure Prophylaxis in Previously Immunized Individuals

- Local wound therapy
- Two doses of rabies vaccine administered IM in deltoid region
- Administer on days 0 and 3.

(continued from page 37)

immediate area with rabies hyperimmune globulin (HRIG).
- Suturing of wound is not recommended unless unavoidable.

No therapy is effective for preventing death due to rabies infection after onset of clinical disease. Therefore, the focus of treatment must be on preventing the virus from reaching the central nervous system. Primary wound management, along with timely and proper administration of rabies immune globulin and vaccine, is essential. Each patient that is presented needs to be evaluated for possible rabies post-exposure prophylaxis (PEP). Those indications are:
- Epidemiological evidence for need of PEP
- Patient clinical picture and history
  a. bite or scratch with infectious material penetrating intact skin
  b. contact with saliva/infectious material to wound or mucous membranes
- Reservoir wild animals, including bats
  a. physically present and bite cannot be ruled out and rabies in the animal (bat) cannot be ruled out by testing.

Guidelines for alteration of the PEP regimen are as follows:
- It is never too late to initiate PEP, unless clinical signs are already present.
- If PEP vaccine schedule is interrupted,
  a. consider on a case by case basis
  b. generally the regimen is resumed
- If the delay is significant—or If patient is immunosuppressed
  a. sequential monitoring of rabies titers should be conducted
  b. possible administration of additional vaccine maybe required.
- In no situation should the entire series be re-initiated.
- Administration of additional HRIG is contraindicated.

Numerous rabies vaccines are available. See sidebar. Individuals requiring PEP or pre-exposure vaccination should contact their personal physicians for these services. The Bureau of Veterinary Public Health will continue to be available for consultation.

To assist the vaccine production companies in determining the amount of PEP that is needed in the country, the Missouri Department of Health has been asked to enumerate the number of PEP that are given in the state. We are, therefore, asking each physician and hospital that provides this treatment to complete the form on the top of page 39 until further notice. The form should be mailed to the Bureau of Veterinary Public Health, Missouri Department of Health, P.O. Box 570, Jefferson City, MO 65102-0570, Ph: (573) 751-6136.

Ferret News

Veterinary clinical practitioners should be aware that ferrets are now considered to be on equal status with dogs and cats, according the Rabies Compendium. This means that they should be vaccinated against rabies and if involved in a bite altercation, an observation period of ten days is recommended.

Hawaiian Travel

Veterinarians should advise individuals who are wanting to take their pets to Hawaii, that they may now do so. However, dogs and cats entering Hawaii must have the following:
- Two rabies vaccinations given at least six months apart, with the most recent vaccination given no less than three months and no more than 12 months prior to entry or re-entry into the state.

Human Rabies Vaccines Available in the United States for Post-Exposure and Pre-exposure Vaccination

Human diploid cell vaccine (HDCV) IMOVAX® Rabies

Pasteur Merieux Connaught Laboratories
Ph: (800) 822-2463

Brand:	IMOVAX -IM Human diploid cell vaccine (HDCV)
Package:	1 ml single dose vial w/disposable needle & syringe
Dose Regimen:	5 (post exposure) or 3 (pre-exposure)

Brand:	IMOVAX I.D.
Package:	0.1 ml single dose syringe
Dose Regimen:	3 (pre-exposure only)

Rhesus monkey fetal lung cell vaccine, Rabies Vaccine Adsorbed® (RVA)

SmithKline Beecham Laboratories
Phone: (800) 877-1158

Brand:	Rhesus diploid cell vaccine (rabies vaccine adsorbed)
Package:	1 ml single dose vial
Dose Regimen:	5 (post exposure) or 3 (pre-exposure)

Purified chick embryo cell vaccine (PCECV) RABAVERT® Rabies

Chiron Behring Therapeutics
Phone: (800) 244-7668

Brand:	*RabAvert*
Package:	1 ml single dose
Dose Regimen:	5 (post exposure) or 3 (pre-exposure)

REPORT FORM FOR RABIES POST-EXPOSURE PROPHYLAXIS

DATE:___/___/___ STATE:_____ COUNTY:_____

PATIENT INFORMATION:
AGE:_____ SEX:_____ WEIGHT:_____

ANIMAL:_____ CONFIRMED RABID: N_____ Y_____

TYPE OF EXPOSURE:	Y	N	
BITE	___	___	
SCRATCH	___	___	
OTHER	___	___	SPECIFY:_____

TREATMENT INFORMATION:
HRIG: N____ Y____ DOSE (ml)_____
HDCV: N____ Y____ NUMBER OF DOSES_____

TREATMENT COMPLETED: Y____ N____

IF NO, PLEASE COMMENT_____
_____
_____

Return this form to the Missouri Department of Health, Bureau of Veterinary Public Health, P.O. Box 570, Jefferson City, MO 65102-0570, Ph: (573) 751-6136.

- A serologic antibody test no less than three months and no more than 12 months prior to arrival in the state and a repeat test after arrival. Test results must be no less than 0.5 IU. The antibody test is known as the OIE fluorescent antibody virus neutralization (FAVN) test and is available at Kansas State University and (for military personnel only) at the Department of Defense Veterinary Laboratory at Fort Sam Houston, Texas.
- A microchip identification issued by the state. FAVN test results must be identified by this microchip number for results to be considered valid.
- A health certificate written in English.

A microchip identification and health certificate can be obtained from your local veterinarian.

1997 Communicable Disease Outbreaks

(continued from page 5)
of hepatitis A, 350 cases of culture-confirmed influenza A in a college, 15 cases of head lice (*Pediculosis capitis*) associated with a school, and 15 cases of ringworm of the scalp (tinea capitis) affecting members of a school wrestling team. Seven cases of foodborne *Staphlococus aureus* occurred among members of a bus tour group who had eaten at the same restaurant.

1997 Nosocomial Outbreaks

Hospitals, nursing homes and other health-care facilities or institutions in Missouri reported 33 health-care-associated (nosocomial) outbreaks of communicable disease during 1997. Altogether, 686 cases of illness were reported. This is a slight decrease of 2.9 percent from the 34 outbreaks (783 cases) reported in 1996.

In 30 (90.9%) of the outbreaks, transmission of disease was person-to-person. Of the three outbreaks of chickenpox (varicella), two were suspected to be airborne with person-to-person transmission a possibility in the third outbreak. Although there is evidence the index case in the latter outbreak of chickenpox exhibited shingles (herpes zoster), the possibility of airborne transmission cannot be ruled out, even though the risk of transmission in cases of shingles is usually associated with vesicular contact. Table 2 on page 5 categorizes nosocomial outbreaks for 1997 by cause and number of cases.

Missouri
EPIDEMIOLOGIST

Published by the
Missouri Department of Health
P.O. Box 570
Jefferson City, MO 65102-0570
www.health.state.mo.us

The *Missouri Epidemiologist* is a regularly scheduled bimonthly newsletter published jointly by the Office of Epidemiology, Center for Health Information Management and Epidemiology (CHIME) and the Division of Environmental Health and Communicable Disease Prevention (EHCDP). CHIME's responsibilities include managing health statistical systems, epidemiological functions and information systems of the department. EHCDP's responsibilities include the prevention and control of communicable diseases and environmentally induced illnesses, including the requisite epidemiological investigations.

The Managing Editor is H. Denny Donnell, Jr, MD, MPH, State Epidemiologist. Production Manager is Diane C. Rackers. Questions or comments should be directed to (573) 751-6128 or toll free (800) 392-0272.

Alternate forms of this publication for persons with disabilities may be obtained by contacting the Missouri Department of Health, Office of Epidemiology, P.O. Box 570, Jefferson City, MO 65102-0570, Ph: (573) 751-6128. TDD users can access the preceding phone number by calling (800) 735-2966.

LATE BREAKERS

☞ International honors were recently bestowed on the Department of Health's Missouri Health Strategic Architecture and Information Cooperative Project (MOHSAIC). The 1998 Computerworld Smithsonian Award recognized MOHSAIC for its innovative use of information technology in a way that has a profound, positive and demonstrable impact on mankind. Missouri was recognized for taking the lead in the nation in developing an integrated statewide health information system, which will dramatically improve the identification and understanding of health threats, health status and risk behaviors. Only three other states are presently working on an integrated system. A description of MOHSAIC was given in the January-February 1998 issue of the *Missouri Epidemiologist*. For more details, contact Nancy Hoffman at (573) 751-6272.

☞ Recent changes to 210.030, RSMo, Blood Tests for Pregnant Women, more clearly define the responsible parties for the administration of prophylactic treatment of babies born to Hepatitis B positive women and women whose status is unknown. It states that "the physician or person who professionally undertakes the pediatric care of a newborn shall also administer the appropriate doses of hepatitis B vaccine and gammaglobulin specific for hepatitis B, or HBIG, within twelve hours of birth to infants born to mothers who are hepatitis B positive." It also stipulates that when "the results of such test are unknown within twelve hours, the hepatitis B vaccine and gammaglobulin specific for hepatitis B, or HBIG, shall be administered as soon as possible." Questions concerning the prenatal screening law should be directed to the Bureau of Immunization at (800) 699-2313.

☞ The Centers for Disease Control and Prevention (CDC) recently published updated guidelines for management of health-care workers who have occupational exposure to human immunodeficiency virus (HIV); the guidelines also contain recommendations for HIV postexposure prophylaxis. (CDC. Public Health Service guidelines for the management of health-care worker exposures to HIV and recommendations for postexposure prophylaxis. *MMWR* 1998;47[No. RR-7]). CDC has also published guidelines which contain current recommendations for management of occupational exposures to hepatitis B and hepatitis C viruses. (CDC. Immunization of Health-Care Workers: recommendations of the Advisory Committee on Immunization Practices [ACIP] and the Hospital Infection Control Practices Advisory Committee [HICPAC]. *MMWR* 1997;46[No. RR-18]). Both sets of guidelines are available on the World Wide Web at http://www.cdc.gov/epo/mmwr/mmwr_rr.html.